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78

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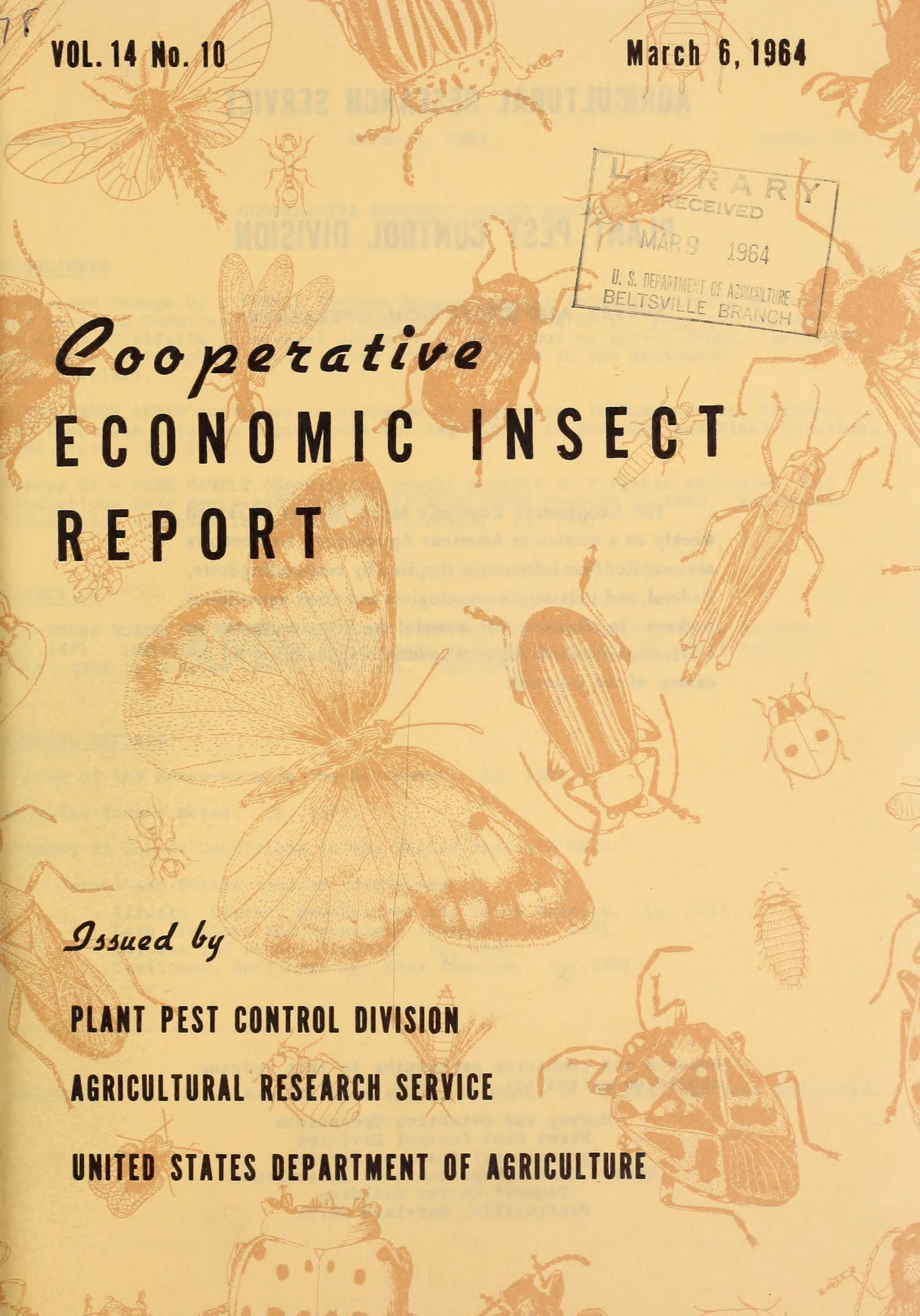

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 14 March 6, 1964 Number 10

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Increased damage by a WEEVIL (*Hypera brunneipennis*) found in alfalfa in Yuma and Maricopa Counties, Arizona. Eggs of ALFALFA WEEVIL (*H. postica*) present in stems of alfalfa in several areas of Georgia, but no larvae found. GREENBUG and other grain aphids continue low or noneconomic in the Southwest. (pp. 141-142).

GREEN PEACH APHID continues to increase on vegetables in Yuma County, Arizona, and increases noted on sugar beets and vegetables in Maricopa and Pinal Counties, same State. (p. 143).

Survey of a PINE SAWFLY (*Neodiprion pratti pratti*) in Virginia indicated that populations have decreased appreciably from those present in 1963. Noticeable defoliation expected in only few small areas. (p. 144).

DETECTION

OLD-HOUSE BORER (*Hylotrupes bajulus*) reported for the first time in Missouri. (p. 147). IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) collected for first time in Lowndes County, Georgia. (p. 148).

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 145).

Hawaiian Insect Notes. (p. 150).

Summary of Insect Conditions in the United States - 1963

Cereal and Forage Insects (continued).

- Alfalfa, Clover, Sweetclover and Vetch Insects. (p. 151).
- Lawn, Pasture and Rangeland Insects. (p. 162).
- Soybean and Peanut Insects. (p. 166).
- Sunflower, Safflower and Flax Insects. (p. 170).

Reports in this issue are for week ending February 28 unless otherwise indicated.

WEATHER BUREAU'S 30-DAY OUTLOOK

MARCH 1964

In contrast to the cold weather of February, the Weather Bureau's 30-day outlook for March calls for temperatures to average above seasonal normals east of the Continental Divide except for near normal in States bordering the Gulf of Mexico and in New England. However, below normal average temperatures are anticipated west of the divide. Precipitation is expected to exceed normal west of the Continental Divide and also in a broad swath extending from the west gulf coast through the Tennessee and Ohio Valleys and the southern and central Appalachians. Subnormal amounts are indicated from the northern Plains eastward to the western Great Lakes. In unspecified areas near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING MARCH 2

On Monday morning, February 24, a storm was intensifying over southern Saskatchewan, Canada. Subzero cold flowed into Minnesota, Wisconsin, Iowa, Illinois, and Michigan. Pellston, Michigan, and Hibbing, Minnesota, registered 21° below zero. Northerly winds reached 60 m.p.h. at some locations in the northern Rocky Mountains and northern Great Plains. The arctic front continued southward. Six inches of new snow fell at Lander, Wyoming. Heavy rain fell along the gulf coast. Subzero temperatures occurred over the northern Appalachians and subfreezing weather reached the Gulf of Mexico. Tallahassee, Florida, registered 24° Monday morning. Cold air continued to pour into the northern midsection on Tuesday. Gunflint Lake, Minnesota, registered 28° below zero on Tuesday morning. By midday Tuesday, rain and snow fell over the highlands of the Middle Atlantic States. Light snow slicked the highways in the central Great Plains. By Wednesday, the cold front stretched from northern New England to Texas and snow fell over a band 200 miles wide extending from Ohio to New York.

A disturbance centered over the Gulf of Mexico produced generous rains along the coast on Thursday. Tallahassee, Florida, registered 5.59 inches and Jacksonville 3.40 inches on that day. The disturbance blanketed the Southeastern States with low clouds, fog, drizzle, and rain and delayed aircraft operations early Friday morning. As the storm moved up the coast, it produced several inches of snow over the southern Appalachians. Temperatures climbed into the 80's over parts of the Florida Peninsula on Thursday and Miami registered 87° on Friday. As the storm continued up the coast, heavy snow fell over parts of West Virginia, Virginia, and northeastward to New Hampshire. As this storm moved up the Atlantic coast, clear skies and mild temperatures prevailed in the Midwest. Southwest winds exceeded 40 m.p.h. at some locations from Oklahoma to the Great Lakes. In some sections of the Great Plains and Mississippi River Valley, the winds reached 50 m.p.h., causing some soil blowing. Afternoon temperatures climbed into the 50's from Texas to Wisconsin. Amarillo, Texas, registered 64° and La Crosse, Wisconsin, 58° on Saturday. Mild, windy weather continued over mid-America on Sunday and temperatures in the 60's were common from the Gulf of Mexico to northern Missouri. Chinooks, blowing down the eastern slopes of the Rockies, warmed the northern Great Plains. Temperatures in the 50's were common over the Dakotas and parts of Montana on Sunday afternoon.

Late in the week, another storm moved into the Pacific Northwest. It produced rains along the coast from Washington to Santa Maria, California, and snow over the higher elevations inland. At the end of the week, another arctic air mass north of Montana was about ready to move into the northern Great Plains -- a situation similar to the pattern at the beginning of the week. Temperatures (Weather continued on page 148).

CEREAL AND FORAGE INSECTS

GREENBUG (*Schizaphis graminum*) - TEXAS - Survey conducted January 24-31 in following 20 panhandle counties: Armstrong, Donley, Collingsworth, Wheeler, Randall, Swisher, Briscoe, Floyd, Hale, Potter, Deaf Smith, Castro, Parmer, Oldham, Hartley, Dallam, Sherman, Moore, Hutchinson and Hansford. Greenbug found in all but Hartley and Dallam Counties. Ranged 0-5 per foot in most counties; however, in Sherman and Parmer Counties, counts ranged 20-25 per linear foot in one irrigated field in each county. Dryland wheat fields were suffering from lack of moisture previous to the heavy snow, more in northern panhandle than in the south. Survey made February 8-11 in following 15 rolling plains counties: Childress, Hardeman, Wilbarger, Wichita, Montague, Tarrant, Parker, Palo Pinto, Shackleford, Jones, Haskell, Stonewall, Kent, Dickens and Crosby. Greenbug found in Wilbarger, Shackleford, Stonewall, Kent, Dickens and Crosby Counties; however, populations ranged less than 5 per linear foot. Wheat in these 15 counties in good condition. (Daniels). OKLAHOMA - Continues at noneconomic levels (fewer than 10 per linear foot) in all counties checked in northwest, north central and central portions of State. Checks in Grandfield area, Tillman County, negative. (Okla. Coop. Sur.). ARKANSAS - Surveys negative in all areas. (Ark. Ins. Sur.).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - TEXAS - Few found in Wilbarger County during greenbug survey February 8-11. (Daniels). OKLAHOMA - Remains very low throughout State, although most common species in all areas. Counts fewer than 10 per linear foot. (Okla. Coop. Sur.). ARKANSAS - Surveys negative in all areas. (Ark. Ins. Sur.).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - OKLAHOMA - Small numbers becoming evident in scattered areas throughout northwest, north central and central areas. (Okla. Coop. Sur.). CALIFORNIA - Adults light on barley plantings in Coalinga and Five Points, Fresno County. (Cal. Coop. Rpt.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - OKLAHOMA - Present in very light numbers in some localities of northwest, north central and central areas. (Okla. Coop. Sur.).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - OKLAHOMA - Heaviest infestations noted in Hitchcock area, Blaine County (central area); ranged 1-3 per linear foot. Lighter counts of 1 per foot observed in scattered localities of Grant County (northwest area). (Okla. Coop. Sur.).

CORN EARWORM (*Heliothis zea*) - FLORIDA - Light on corn ears at Homestead, Dade County. (Knowles, Feb. 17).

FALL ARMYWORM (*Laphygma frugiperda*) - FLORIDA - Light on ears of corn at Homestead, Dade County. (Knowles, Feb. 17).

HESSIAN FLY (*Phytophaga destructor*) - KANSAS - Light infestations noted in Decatur and Thomas Counties (northwest); Trego and Ness Counties (west central); Phillips, Rooks and Osborne Counties (north central); and Ellis, Russell and Rush Counties (central). None found in samples from southwest and south central districts. Samples collected January 27, 28, and February 18, 19. (Somsen).

WHEAT CURL MITE (*Aceria tulipae*) - KANSAS - Overwintering colonies noted on samples from Norton, Decatur, Rawlins and Thomas Counties (northwest); Trego County (west central); Haskell, Seward, Meade and Clark Counties (southwest); Phillips and Osborne Counties (north central); Rush County (central); and Comanche and Barber Counties (south central). (Somsen).

PEA APHID (*Acyrthosiphon pisum*) - ARIZONA - Populations increased slightly in alfalfa in Maricopa and Pinal Counties. Infestations appear generally distributed over entire area. (Ariz. Coop. Sur.). NEW MEXICO - Continues light in alfalfa in southern counties. (N. M. Coop. Rpt.). OKLAHOMA - Counts light on overwintering alfalfa in Kay and Garfield Counties. Some reproduction noted in

Kay County. (Okla. Coop. Sur.). FLORIDA - Nymphs and adults ranged 350-400 per 400 sweeps of untreated Hairy Peruvian alfalfa; few weeds present. (Fla. Coop. Sur., Mead).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - ARIZONA - Increasing slowly in alfalfa in Maricopa and Pinal Counties; no increase noted in Yuma County. (Ariz. Coop. Sur.). OKLAHOMA - Occasional specimens found in Garfield County alfalfa. (Okla. Coop. Sur.). ARKANSAS - Survey negative in Miller County (southwest). (Ark. Ins. Sur.).

LYGUS BUGS (*Lygus* spp.) - ARIZONA - Increasing in alfalfa in Maricopa and Pinal Counties; remain constant in Yuma County alfalfa. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (*Colias eurytheme*) - ARIZONA - Moderate to light in alfalfa in Yuma, Maricopa and Pinal Counties; averaged 20 per 100 sweeps. (Ariz. Coop. Sur.).

ALFALFA LOOPER (*Autographa californica*) - CALIFORNIA - Larvae light on alfalfa in Helm area, Fresno County. (Cal. Coop. Rpt.).

GREEN CLOVERWORM (*Plathypena scabra*) - FLORIDA - Total of 50 small to medium sized larvae collected in 400 sweeps in Hairy Peruvian alfalfa under ideal conditions; few weeds present. (Fla. Coop. Sur., Mead).

ALFALFA WEEVIL (*Hypera postica*) - GEORGIA - Eggs present in stems of alfalfa in several fields surveyed in northwest, north and northeast areas; however, no larvae found. (Johnson).

A WEEVIL (*Hypera brunneipennis*) - ARIZONA - Increased damage found in alfalfa in Yuma and Maricopa Counties. In Yuma County, 10 percent of terminal buds damaged in Yuma Valley and 60 percent on Yuma Mesa. (Ariz. Coop. Sur.).

CLOVER MITE (*Bryobia praetiosa*) - ARIZONA - Increasing on bottom leaves of alfalfa in Yuma County; small numbers also noted in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

FRUIT INSECTS

BROWN SOFT SCALE (*Coccus hesperidum*) - CALIFORNIA - Adults heavy on citrus in Hollister, San Benito County. (Cal. Coop. Rpt.).

COTTONY-CUSHION SCALE (*Icerya purchasi*) - CALIFORNIA - Medium populations reported on citrus trees in Fresno, Fresno County. (Cal. Coop. Rpt.).

CALIFORNIA RED SCALE (*Aonidiella aurantii*) - CALIFORNIA - Ranged light to medium on dooryard citrus in Fresno, Fresno County. (Cal. Coop. Rpt.).

A LEAF-FOOTED BUG (*Leptoglossus zonatus*) - CALIFORNIA - Adults light on Valencia orange trees in Vista, San Diego County. (Cal. Coop. Rpt.).

CITRUS BLACKFLY (*Aleurocanthus woglumi*) - MEXICO - *Biological Control Zone* - Total of 63,597 trees inspected on 183 properties; 1,530 trees found infested on 15 properties in Padilla and Guemez. Inspections in Mainero and Villagran negative. Reports from 13 States indicate need for liberation of parasites on 34 properties; 19 properties with high parasite populations available for capture. Parasites received at Coyoacan Laboratory, Mexico City, or captured for colonization near place of origin, totaled 89,670. Parasitism generally high in southern Tamaulipas. *Chemical Control Zone* - Inspection of 85,003 trees on 1,567 properties in States of Tamaulipas, Nuevo Leon, Sonora and Baja California negative; 11,080 nursery trees in Municipios of Hermosillo, Sonora and Monterrey, Nuevo Leon, included in total. Fourth spray treatment applied to 533 primary and secondary host trees on 5 properties in Municipio Villa de Santiago, Nuevo Leon;

this application necessary because of rains in spray area shortly after first application. (PPC, Mex. Reg., Jan. Rpt.).

WESTERN FLOWER THRIPS (*Frankliniella occidentalis*) - CALIFORNIA - Heavy populations continue to damage mandarin orange and tangelo as fruit reaches maturity. Damage was severe on early maturing varieties; nymphs and adults damaging varieties maturing at present. This is first season such damage by this species has been evident in northern San Diego County. (Cal. Coop. Rpt.).

ORANGE TORTRIX (*Argyrotaenia citrana*) - CALIFORNIA - Larvae light in orange fruit in Hollister, San Benito County. (Cal. Coop. Rpt.).

MEXICAN FRUIT FLY (*Anastrepha ludens*) - MEXICO - Total of 6,309 inspections made of 1,824 traps on 912 properties in Baja California negative. Total of 110 traps on 65 properties inspected 458 times in Sonora also negative. Third and last spraying of Colonia Independencia in Municipio Tijuana, Baja California, completed January 10. (PPC, Mex. Reg., Jan. Rpt.).

MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*) - MEXICO - Inspection of 3,845 traps in the States of Chiapas, Campeche, Oaxaca, Tabasco, Guerrero, Yucatan, Veracruz, Tamaulipas, Nuevo Leon, Hidalgo, Mexico, Jalisco, Colima, Peubla, Sinaloa, Sonora and Baja California and the Federal District and the Territory of Quintana Roo negative. Traps inspected 7,581 times. (PPC, Mex. Reg., Jan. Rpt.).

GRAPE ROOT BORER (*Vitacea polistiformis*) - VIRGINIA - Heavy on roots of grapevines at location in Blacksburg, Montgomery County. (Tarpley, Osborne; Feb. 15).

SAN JOSE SCALE (*Aspidiotus perniciosus*) - ALABAMA - Relatively heavy on some late apple varieties and light on early bearing trees in Coosa County. (Barwood).

TRUCK CROP INSECTS

TOMATO FRUITWORM (*Heliothis zea*) - ARIZONA - Slight increases noted on lettuce in Maricopa County; however, decreasing populations found in Yuma County. (Ariz. Coop. Sur.).

CABBAGE LOOPER (*Trichoplusia ni*) - FLORIDA - Lightly damaged 2 percent of 200 cabbage plants at Sanford, Seminole County. (Desin). CALIFORNIA - Medium on lettuce plantings in Winterhaven, Imperial County. (Cal. Coop. Rpt.).

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) - Surveys in GEORGIA revealed only 3 newly infested properties; 13 properties released from regulation in Lowndes County, 6 in Lanier County, 5 in Thomas County and 1 in Coffee County. Infestations in Thomas and Coffee Counties were last of known infestations in those counties. In LOUISIANA, 14 properties released from regulation and 15 newly infested properties found in known infested parishes. (PPC, South. Reg., Jan. Rpt.).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Continues to increase on vegetables in Yuma County; counts averaged 8-10 per leaf. Increases also noted on sugar beets and vegetables in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

A LEAF MINER FLY (*Liriomyza* sp.) - FLORIDA - Infested 75 percent of 200 celery plants at Sanford, Seminole County. (Desin).

A SPIDER MITE (*Tetranychus* sp.) - NORTH CAROLINA - Infesting 4-5 acres of strawberry in Columbus County; grower experiencing difficulty with control. (Martin, Jones).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SILVER-SPOTTED TIGER MOTH (Halisidota argentata) - CALIFORNIA - Larvae medium on Douglas-fir in general area of Angwin, Napa County. (Cal. Coop. Rpt.).

A TIP MOTH (probably Rhyacionia sp.) - NEW MEXICO - Damaging terminal shoots of pinyon pines in area southwest of Datil, Cibola National Forest; few larvae found. (N. M. Coop. Rpt.).

A TENT CATERPILLAR (Malacosoma sp.) - NEW MEXICO - Occasional tent noted in pinyon pines near Datil, Cibola National Forest. Larvae still alive and feeding on needles. (N. M. Coop. Rpt.).

A BARK BEETLE (Pityophthorus carmeli) - CALIFORNIA - Medium in Torrey pines in Torrey Pines State Reserve at Del Mar, San Diego County. (Cal. Coop. Rpt.).

A PINE APHID (Essigella californica) - CALIFORNIA - All stages medium on 3-needle pines in Colton, San Bernardino County. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - NEW MEXICO - Probably this species, heavy on pinyon pines in area near Magdalena, Cibola National Forest. (N. M. Coop. Rpt.).

JUNIPER SCALE (Diaspis carueli) - FLORIDA - Moderate on leaves of shore juniper (Juniperus conferta) at Largo, Pinellas County. (Bingaman, Feb. 17).

A GALL MIDGE (Contarinia pseudotsugae) - CALIFORNIA - Light on Douglas-fir in Angwin, Napa County. (Cal. Coop. Rpt.).

A PINE SAWFLY (Neodiprion pratti pratti) - VIRGINIA - Survey indicates populations have decreased appreciably from those present in 1963. Defoliation of native pines expected to be noticeable (20-70 percent) only in few small areas; throughout remainder of infested area, larvae will cause less than 20 percent defoliation. Eggs expected to hatch about April. (Morris, Va. Div. Forestry).

A CONIFER SPIDER MITE (Oligonychus coniferarum) - CALIFORNIA - Heavy on Juniperus sabina in La Habra, Orange County. (Cal. Coop. Rpt.).

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - Limited scouting conducted in VERMONT and NEW HAMPSHIRE; several small infestations found in latter State in areas known infested in 1963. (PPC, East. Reg., Jan. Rpt.).

GYPSY MOTH (Porthetria dispar) - Scouting of positive trapsites in MAINE and VERMONT completed; results negative. Infestations found on or in vicinity of 10 of 27 lumberyards scouted in western section of MASSACHUSETTS; 27 trailer parks inspected, with 9 infested in varying degrees. To date, 26 egg masses found at 8 sites where moths trapped last summer in NEW JERSEY; surveys of nurseries and common carrier sites negative. (PPC, East. Reg., Jan. Rpt.).

A JUNIPER TWIG MOTH (Periploca nigra) - CALIFORNIA - Larvae heavy in juniper plants in Goleta, Santa Barbara County. (Cal. Coop. Rpt.).

AN OLETHREUTID MOTH (Epinotia subviridis) - CALIFORNIA - Heavy in juniper in Inverness, Marin County. (Cal. Coop. Rpt.).

GREEN PEACH APHID (Myzus persicae) - FLORIDA - Moderate on leaves of Chrysanthemum sp. at Sanford, Seminole County. (Youtsey).

COTTONY-CUSHION SCALE (Icerya purchasi) - FLORIDA - Severe on leaves and stem of Pittosporum tobira at Lake Placid, Highlands County (McAuley, Nelson, Feb. 18); general on leaves and stem of Pittosporum sp. at Greenville, Jefferson County (Miller, Feb. 17).

CACTUS SCALE (Diaspis echinocacti) - ALABAMA - Heavy on old potted cactus in Northport home, Tuscaloosa County. (McGlohon). CALIFORNIA - Medium on cactus plants in Corona, Riverside County. (Cal. Coop. Rpt.).

SAN JOSE SCALE (Aspidiotus perniciosus) - ALABAMA - Unusually heavy on roses under and near heavily infested apple and pear trees on farm in Lee County. (Bagby).

Coccids in California - Lepidosaphes ulmi, Saissetia oleae and Aspidiotus hederae heavy on redbud trees in the La Purisima Mission grounds. Mycetococcus ehrhorni medium on California live oaks in Lompoc, Santa Barbara County. (Cal. Coop. Rpt.).

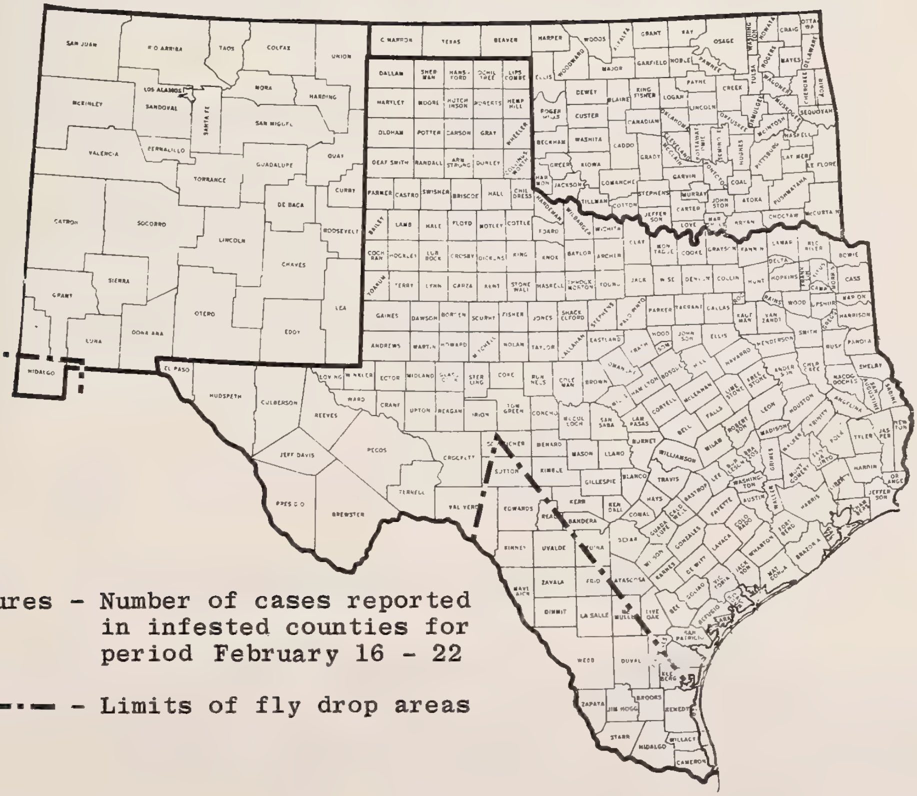
CITRUS RED MITE (Panonychus citri) - FLORIDA - Moderate on Elaeagnus fruitlandii at Macclenny, Baker County. (Collins).

A SNAIL (Oxyloma effusa) - FLORIDA - Heavy numbers occurring in soil about philodendron seedlings at Apopka, Orange County. (Musgrove, Feb. 19).

INSECTS AFFECTING MAN AND ANIMALS

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

No screw-worms were reported during the period February 16 - 22 from the eradication area. The reporting of nonscrew-worm larvae continues good. Approximately 13 million sterile flies were released in TEXAS and 225,000 in NEW MEXICO during the period. (Anim. Dis. Erad. Div.).



Figures - Number of cases reported in infested counties for period February 16 - 22

—·—·— - Limits of fly drop areas

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Populations reported declining in Bryan County (south central), with most grubs having emerged. Ranged 6-10 per head on 50 percent of cattle checked in Okmulgee County (east central). Counts continue light to moderate in Garvin County (south central). Counts declining in Payne County; averaged 3 per head on yearling cattle checked. (Okla. Coop. Sur.). GEORGIA - Averaged 0-7.2 grubs per animal in several beef herds checked January 20 - February 14 from southern through northern areas. (Roberts). NORTH CAROLINA - Larvae reported in CEIR 14(5): 69 have now left backs of cattle. (Mount).

NORTHERN CATTLE GRUB (*Hypoderma bovis*) - NORTH CAROLINA - Larvae present in backs of native beef animals examined in Wake County February 25; one second-stage larva found in one animal and one new third-stage found in another animal, of 24 examined. (Mount).

CATTLE GRUBS (*Hypoderma* spp.) - UTAH - Appearing in backs of cattle in Cache Valley, Cache County, during past 3 weeks. Heavy in young stock raised in Grantsville area, Tooele County. (Knowlton).

MOSQUITOES - FLORIDA - Dipping in rainwater pools between U.S. Highway 441 and swamp forest in Santa Fe River floodplain (Columbia County) revealed *Culex restuans* larvae and pupae as most abundant, with *Culiseta inornata* larvae and pupae second most abundant; lesser numbers of fourth-stage larvae of *Anopheles quadrimaculatus* and *Culex territans*, and *Aedes vexans* pupae were also taken. Latter species has probably been much more abundant and sampling showed only late developing individuals of brood. (Mead, Feb. 22). *Aedes mitchellae* taken biting man in suburban area of Gainesville, Alachua County. Ten adults collected while making 400 sweeps of alfalfa at Gainesville; too rubbed for determination. (Mead).

FACE FLY (*Musca autumnalis*) - VIRGINIA - Adults common in home in Clinchport, Scott County; similar infestations noted throughout county. (Tarpley, Rich; Feb. 12).

LONG-NOSED CATTLE LOUSE (*Linognathus vituli*) - GEORGIA - Infestations ranged very light to 3.23 per square inch in beef herds checked January 30 - February 14 from southern through northern areas. (Roberts).

CATTLE LICE - UTAH - Numerous in some herds and very heavy on some cattle in Rich County. (Knowlton). Conspicuous on some beef cattle in western Box Elder County and on some range cattle in Kane County. Controls applied to 1,300 head in Juab County. (Knowlton, Esplin). OKLAHOMA - Populations reported moderate from east central, south central, northeast and northwest areas. Approximately 15 percent of infested cattle sprayed in Bryan County area. (Okla. Coop. Sur.). GEORGIA - Only one specimen of *Haematopinus eurysternus* (short-nosed cattle louse) collected in survey of beef herds January 20 - February 14 from southern through northern areas. (Roberts).

HOG LOUSE (*Haematopinus suis*) - ALABAMA - Light on few brood sows in Lee County. Numerous infestations reported in Covington County. (Jones, Pike). OKLAHOMA - Heavy in Bryan County (south central) and moderate in Okmulgee County (east central). (Okla. Coop. Sur.).

VESPID WASPS - UTAH - Annoying in some school rooms at Logan, Cache County. (Knowlton).

A CANARY LUNG MITE (*Sternostoma tracheacolum*) - CALIFORNIA - Infesting canaries in local aviary in San Luis Obispo, San Luis Obispo County; several birds have died from infection in this aviary. Occasional infestations of individual pet canaries have been reported during past few months. (Cal. Coop. Rpt.).

BLACK-LEGGED TICK (*Ixodes scapularis*) - FLORIDA - Fed on human at Englewood, Sarasota County. (Frederic, Feb. 12).

HOUSEHOLD AND STRUCTURAL INSECTS

OLD-HOUSE BORER (Hylotrupes bajulus) - MISSOURI - Collected from wood in box spring for bed. Bed brought from an Atlantic Coast State in 1959. This is first time this species reported from State. Det. by F. E. Wood. (Houser).

A BARK BEETLE (Pseudopityophthorus pubipennis) - CALIFORNIA - Adults heavy in household woodwork in Morro Bay, San Luis Obispo County. Heavy adult numbers also occurring in residence in Susanville, Lassen County. (Cal. Coop. Rpt.).

BOXELDER BUG (Leptocoris trivittatus) - NORTH CAROLINA - Large numbers present in Wilson County home. Det. by D. L. Wray. (Mount).

FLIES - MARYLAND - Undetermined, large species annoying in homes in Baltimore and Prince Georges Counties. (U. Md., Ent. Dept.).

SUBTERRANEAN TERMITES (Reticulitermes spp.) - MARYLAND - Winged forms appearing in homes in Montgomery and Talbot Counties. (U. Md., Ent. Dept.).

LARGER YELLOW ANT (Acanthomyops interjectus) - MARYLAND - Alates swarmed in house at Silver Spring, Montgomery County. (U. Md., Ent. Dept.).

LITTLE BLACK ANT (Monomorium minimum) - OKLAHOMA - Reproductive forms noted in several homes in Stillwater area, Payne County. (Okla. Coop. Sur.).

CLOVER MITE (Bryobia praetiosa) - NORTH CAROLINA - Large numbers present in Davidson County home. Det. by D. L. Wray. (Mount). CALIFORNIA - Beginning to invade residences in Sacramento, Sacramento County. This is unusually early for movement to begin. (Cal. Coop. Rpt.).

STORED-PRODUCT INSECTS

BROWN SPIDER BEETLE (Ptinus clavipes) - CALIFORNIA - Adults heavy in dry dogfood in Laytonville, Mendocino County. (Cal. Coop. Rpt.).

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) - CALIFORNIA - Extremely heavy in horse feed in stable at Clovis, Fresno County. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

BROWN LACEWINGS (Micromus spp.) - ALABAMA - These and undetermined ichneumons common at night lights in central part of State. (McQueen).

PRAYING MANTIDS - ALABAMA - Egg cases of undetermined species numerous in apple orchards in Coosa County. Hatching not yet underway. (Sessions).

MISCELLANEOUS INSECTS

A GELECHIID MOTH (Gnorimoschema plaesiosema) - CALIFORNIA - Larvae medium in nightshade plants in Oxnard, Ventura County. (Cal. Coop. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - Treatment completed in Gadsden County, FLORIDA, with exception of Seaboard Railroad property. Area surrounding peanut-processing plant in Jackson County treated. Highway shoulders in Jefferson County, GEORGIA, treated. Inspection of pecan nursery at Lumberton, MISSISSIPPI, revealed infestation present on acreage planted this year. Treatment completed on infestation at Farmerville, Union Parish, LOUISIANA. Ground treatment completed in small areas of Craighead and Greene Counties, ARKANSAS. Ten thousand bales of hay stored on infested ground in Madison County, TENNESSEE, fumigated. Larval surveys in the CAROLINAS revealed no new infestations and only minor extensions to known infestations. (PPC, South. Reg., Jan. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - Infestations found on highway shoulder north of Valdosta, GEORGIA; this is the first record for Lowndes County. Appraisal surveys in MISSISSIPPI favorable with very few exceptions. Surveys in LOUISIANA resulted in finding much newly infested acreage; Allen Parish now believed generally infested. Appraisal surveys in Bexar, Colorado and Wharton Counties, TEXAS, show good results. Surveys show eastern half of Montgomery County generally infested. Treatment completed on golf course in Harris County. Minor extensions of known infestations found in Ashley and Union Counties, ARKANSAS; surveys negative in other counties. (PPC,South. Reg., Jan. Rpt.). FLORIDA - Light on east side of Highway 301 in Nassau County 100 feet north of Duval County line. (Josey).

SPRINGTAILS - ALABAMA - Appearing in puddles and on moist soil following late February showers in Lee and Macon Counties. (Barwood).

STICKY BOARD TRAPS - ARIZONA, Yuma (2/22-28) - GREEN PEACH APHID (Myzus persicae) - averaged 0.92 per trap for 12 traps; MELON APHID (Aphis gossypii) - averaged 4.85 per trap for 12 traps. (Ariz. Coop. Sur.).

INTERCEPTIONS

GEORGIA - Light infestations of SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis), RICE WEEVIL (Sitophilus oryzae) and CIGARETTE BEETLE (Lasioderma serricorne) found in dry bay leaves and dry ginger roots aboard ship at Savannah, Chatham County. (Vanderford, Feb. 22).

Weather continued from page 140

averaged above normal over the northern Great Plains and below normal over most of the rest of the Nation. Temperatures averaged 9° or more below normal over the central and southern Rocky Mountains and at a few locations scattered along the gulf. Temperatures averaged more than 9° above normal over part of northeastern Montana.

Rainfall exceeded 0.50 inch over the coastal portions of Washington, Oregon, and northern California, from southeastern Texas to Virginia, and in extreme eastern Massachusetts. Elsewhere precipitation was of little importance. Precipitation exceeded 2 inches over southern Louisiana, southern Georgia, southern South Carolina, and northern Florida. Some stations in northern Florida received more than 4 inches of rain during the week. (Summary supplied by U. S. Weather Bureau).

LIGHT TRAP COLLECTIONS

	Temperature °F	Precipitation	Type of trap *	*Agrotis ipsilon* (black cutworm)	*Carpocapsa pomonella* (codling moth)	*Chorizagrotis auxiliaris* (army cutworm)	*Estigmene acrea* (salt-marsh caterpillar)	*Faronta diffusa* (wheat head armyworm)	*Feltia subterranea* (granulate cutworm)	*Heliothis virescens* (tobacco budworm)	*Heliothis zea* (bollworm, corn earworm)	*Laphygma frugiperda* (fall armyworm)	*Loxostege commixtalis* (alfalfa webworm)	*Loxostege similalis* (garden webworm)	*Loxostege sticticalis* (beet webworm)	*Ostrinia nubilalis* (European corn borer)	*Peridroma saucia* (variegated cutworm)	*Prodenia ornithogalli* (yellow-striped armyworm)	*Protoparce quinquemaculata* (tomato hornworm)	*Protoparce sexta* (tobacco hornworm)	*Pseudaletia unipuncta* (armyworm)	*Spodoptera exigua* (beet armyworm)	*Trichoplusia ni* (cabbage looper)	Major crop **
FLORIDA																								
Gainesville 2/24			BL	3																	3			
GEORGIA																								
Tifton 2/20-26			BL							0	0								0	0				
SOUTH CAROLINA																								
Charleston 2/17-23	28-65	2.35"	BL	1			0		0	0	0	0					0	0	0	0	0		0	
Charleston 2/24-3/1	29-62	2.57"	BL	2					1	0	0	0					0	0	0	0	0		0	
TEXAS																								
Brownsville 2/20-26			5 BL	34			48		180	1	35			122			32	31			43		1	

* BL = blacklight; I = incandescent; MV = mercury vapor ; O = other

** alf. = alfalfa; beet = garden beet and/or sugar beet; cole = cole crops (crucifers); cott. cotton; FC = field corn; grain = small grains; leg. = legumes (unspecified); lett. = lettuce; pean. = peanut; pepp. = pepper; pot. = potatoes; SC = sweet corn; sol. = solanaceous plants (unspecified); soy. = soybean; TC = truck crops (unspecified or mixed); tob. = tobacco; tom. = tomato.

HAWAIIAN INSECTS NOTES

The following notes on Hawaii insect conditions were presented at the 697th meeting of the Hawaiian Entomological Society held January 13, 1964.

A MEALYBUG (*Pseudococcus obscurus* Essig) was collected on flowers of firebush (*Myrica faya* Aiton) at Kokee, Lauai, on March 9, 1963. Det. by J. W. Beardsley. (N. L. H. Krauss).

A STINK BUG (*Brochymena quadripustulata* (Fabr.)) was found to be numerous in storage areas on the farm of M. Kaneshiro at Lualualei, Oahu, by S. Yamamoto in December 1963. This is one year after the first discovery of this stink bug at the same farm. Searches in warmer months have been unsuccessful probably because the species occurs on plants in the field and wasteland during these months. (N. L. H. Krauss).

Outbreaks of a TARO LEAFHOPPER (*Tarophagus prosperpina* (Kirkaldy)) were observed in Waiahole Valley, Oahu, in November and December 1963 by C. J. Davis and J. Kim; in Waimea Valley, Kauai, in December 1963 by S. Au; and in Waipio Valley, Hawaii, in December 1963 and January 1964 by E. Yoshioka. (N. L. H. Krauss).

A NOCTUID MOTH (*Eublemma anachoresis* (Wallengren)) - Adults were reared from larvae collected in terminal buds of *Waltheria americana* L. at Mapulehu, Molokai, during August 1963. This is a new island record for this species. (J. W. Beardsley).

A PARASITIC TACHINA FLY (*Trichopoda pennipes* (Fabr.)) - A female mantid (*Tenodera australasiae* Sauss.) was collected at a home in Aina Haina, Honolulu, during December 1963; 2 eggs, apparently *T. pennipes*, were attached to the head. The mantid was held in the laboratory, but died after 2 weeks in captivity. No parasites emerged from the dead mantid. (J. W. Beardsley).

FORMOSAN SUBTERRANEAN TERMITE (*Coptotermes formosanus* Shiraki) damaged the insulation of an electrical cable, which resulted in a power failure in the runway lighting system at the Marine Corps Air Station, Kaneohe, Oahu. Investigation showed that termites built a large branch nest in underground manhole nearest point of failure. Mud tubes had been built up to the top of the concrete manhole, as well as along the inside of the cement-asbestos ducts (3-inch diam.) joining manholes and through which the wiring is drawn; manholes are approximately 75 feet apart. Mud tubes extended to the second adjacent manhole, a distance of 150 feet. Only damage noted was about 20 feet from branch nest, where a short circuit had burned out insulation. The ducts were so mud-filled that the use of a truck was necessary to pull out the damaged cable. The nest was carefully dug out, but only thousands of workers and soldiers were observed; no secondary queens were found. A crushed rock drain is located at the bottom of each manhole; it is believed this was the mode of entrance. Nearest brush is approximately 250 feet away and located on the inside of a 150-foot wide taxiway, where a hillside was cut down over 100 feet at time of construction. No sign of wooden form boards could be seen where a colony might start nearby; it is believed the main colony may have started 250 feet away. The first reported damage by this termite in Kaneohe was in 1953. (Clagg).

A MANTID (*Orthodera burmeisteri* Wood-Mason) - Adults and an ootheca were exhibited. The species was first reported in September 1962 when a single adult was collected in a light trap in Waipio, Oahu, and again in September 1963 when 5 adults were collected from a castor-bean plant in Ewa, Oahu. Det. by A. B. Gurney. (Mabel Chong).

A PARASITIC BRACONID (*Mirax* sp.) was exhibited and reported to have been recently found established on Oahu. Specimens were reared from *Parectopa marginestrigata* (Wals.) (a gracilariid) collected on 'ilima in Honolulu in 1961 and 1963. Det. by C. F. W. Muesebeck. (Mabel Chong).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1963

(continued from page 137)

CEREAL AND FORAGE INSECTS (continued)

ALFALFA, CLOVER, SWEETCLOVER AND VETCH INSECTS

Highlights:

The ALFALFA WEEVIL was the most important pest of alfalfa in 1963, with damage ranging from light to heavy. It was reported from three States for the first time (New Hampshire, Mississippi and Arkansas), and a number of new counties were reported infested in Ohio, Kentucky, Tennessee, Alabama and other States in the eastern part of the Nation. Areas where the weevil appeared to be the most damaging in the East were Pennsylvania, Maryland, Virginia and along the Appalachian Mountains and Piedmont Plateau of the Carolinas, Georgia and Alabama. In the Western States, alfalfa weevil was of major importance and damage was severe in many instances. Oregon, Nevada, Utah, Montana and Wyoming were especially hard hit by the weevil; and commercial damage to alfalfa was reported for the first time in 1963 in Whitman and Asotin Counties, Washington. Resistance to several of the chlorinated hydrocarbon insecticides is being found in some of the States where alfalfa weevil damage has been the greatest. CLOVER LEAF WEEVIL was of more importance in Illinois than the previous year, and CLOVER HEAD WEEVIL was heavy on crimson clover in Arkansas and Alabama. PEA LEAF WEEVIL was more numerous than usual on alfalfa in northwestern Washington, and BLACK BLISTER BEETLE became a problem in Illinois. Damage by PEA APHID was not as prevalent as usual, although Minnesota reported heavier than usual numbers and populations in Wyoming were markedly above those found in 1962. SPOTTED ALFALFA APHID was at the lowest level in Nevada since 1957, and only an occasional flareup occurred in California. The aphid was heavy during the fall in Oklahoma and Kansas, with populations in the latter State generally at the highest level in several years. Spotted alfalfa aphid was found in Nebraska, South Dakota, Wisconsin, Illinois and Indiana in 1963, but no appreciable damage resulted. In Virginia, spotted alfalfa aphid caused severe damage to fall-seeded alfalfa in October and November. This was the first year such damage has been inflicted in Virginia since 1959. Infestations were also more severe during the late summer and fall in Georgia than in recent years. POTATO LEAFHOPPER caused some yellowing of alfalfa in Wisconsin, Vermont, New York, New Jersey and Maryland; and THREE-CORNERED ALFALFA HOPPER caused severe girdling of alfalfa in Arizona. Various species of PLANT BUGS were active on alfalfa as usual, and in some instances, controls were justified. The problem of resistance made control difficult in some areas of California. ALFALFA CATERPILLAR was unusually abundant in New Mexico and Arizona, and many fields of alfalfa were damaged. High populations occurred during August and September in Minnesota and northeastern Nebraska. Damaging numbers of FALL ARMYWORM, CORN EARWORM, ARMY CUTWORM and BEET ARMYWORM were reported locally on alfalfa in several Western States; and GARDEN WEBWORM caused light to very heavy damage to alfalfa in eastern Nebraska. SPIDER MITES caused rather extensive damage to red clover in Virginia, Maryland and Delaware; and TWO-SPOTTED SPIDER MITE was rather serious on clover in central Washington.

ALFALFA WEEVIL (Hypera postica) was collected for the first time in NEW HAMPSHIRE on May 21, 1963, in Rockingham County. Specimens were later collected in Merrimack, Cheshire and Strafford Counties. Alfalfa weevil was more numerous in VERMONT than in 1962, but no apparent damage yet. It is present in Windham County (West River and Connecticut River Valleys) and in Bennington County. In MASSACHUSETTS, alfalfa weevil caused extensive damage in some untreated alfalfa fields in 1963. Adults and first and second-stage larvae were observed on May 1.

The first pupa was recorded on May 31. Newly emerged adults were observed on June 13. The high count, 2,440 individuals per 100 sweeps, was found on June 5 in Berkshire County. (See CEIR 13(37):1095-1096). Of particular note is the great increase of the alfalfa weevil in Massachusetts. In 1961, this weevil represented only 1.4 percent of all insects on forage crops; in 1962, it comprised 1.8 percent; in 1963, it rose to 38 percent. Larvae of alfalfa weevil were reported a problem in New Haven County, CONNECTICUT, in June. In NEW YORK, the southeast, which includes the lower Hudson River Valley, is the area most heavily infested by the alfalfa weevil. In this area (Dutchess County), the weevil was first found in late April and larvae reached a peak of approximately 1,900 per 25 sweeps in early June. By mid-June, most pupation had taken place. Along with wet conditions of July, populations fell to very low levels of 2-20 per 25 sweeps, remaining at that level until late September when the populations increased again. Commercial damage by alfalfa weevil in New York was most noticeable in Dutchess, Ulster, Orange and Columbia Counties. Other agricultural areas of the State experienced relatively little losses from the weevil. The weevil again caused heavy losses to alfalfa in PENNSYLANVIA. Rainy weather prolonged the first cutting for several weeks during which time the weevil continued to increase and feed, even defoliating fields that had been treated in the spring. Alfalfa weevil has now been reported from all Pennsylvania counties.

Larvae of alfalfa weevil were again about normal in MARYLAND, causing from moderate to heavy damage to first-growth alfalfa in all sections. Conspicuous damage also occurred on second-growth alfalfa in all sections of that State. In early August, there was a noticeable buildup of larvae, up to 10 per sweep, in some central Maryland fields. Survey for alfalfa weevil is difficult in NEW JERSEY since most alfalfa is treated with insecticides. In untreated check plots of demonstration tests in the southern area, larvae reached a peak of 80-100 per sweep during the week of May 9-16. In the untreated portion of a field in central New Jersey, larval populations never exceeded 15-20 per sweep. In DELAWARE, first-stage larvae were first noted feeding on alfalfa in New Castle County on March 26. Larval populations on first-growth alfalfa appeared highest throughout Delaware during the week of May 13. The highest spring-laid egg counts in old alfalfa stems of 4.79 eggs per stem were approximately equal to 1962's highest estimate and occurred at about the same time; April 22. Larval feeding injury to first-growth alfalfa was moderate in most untreated Delaware fields and rather light to second-growth fields during the last half of June. In RHODE ISLAND, eggs were difficult to find in the Kingston area of Washington County in late May. Counts of 5 larvae per sweep were recorded in mid-June. Populations of alfalfa weevil were generally very low in Rhode Island, even in untreated fields.

Alfalfa weevil larvae caused considerable concern throughout VIRGINIA in 1963, especially on the first and second cuttings of alfalfa. Extensive damage occurred on first-cutting alfalfa in untreated fields and in most treated fields in the southern part of the west and east central areas and, in some instances, in the northern and northeast sections of the State. Alfalfa weevil has apparently developed resistance to fall applications of some chlorinated hydrocarbon insecticides in some areas of NORTH CAROLINA. Only one-half to two-thirds of normal control was obtained in the central and northeastern Piedmont. All stages of the weevil were present in the Piedmont during the summer months and light damage to alfalfa occurred all during the summer. Damage by alfalfa weevil was found in all SOUTH CAROLINA fields of alfalfa that were not protected. Most fields to which granular insecticides had been applied the previous fall were satisfactorily protected. Alfalfa weevil continues to be the number one insect problem of alfalfa in GEORGIA. However, this past spring the first larvae were observed later than usual, being observed about March 1. Infestations were light to heavy on fields which were not treated in the fall of 1962. Treated fields, with the exception of two or three, showed little feeding damage. Alfalfa weevil spread into every county of TENNESSEE during 1963. In the fall of 1963, farmers treated 100,000 acres of alfalfa out of a possible 180,000 acres. This will mean a saving of $3,000,000 worth of hay in the spring of 1964.

based on a one-ton yield valued at $30.00 per ton. Alfalfa weevil has become widespread in ALABAMA. Damage in 1960-61 and 1962 caused a considerable reduction in acres in most counties. Damage to the remaining acres was heavy in 1963 except where good controls had been adopted. Alfalfa weevil was reported for the first time in MISSISSIPPI during 1963. It probably had been present in the State for two or three years prior to this report. The damage by this pest and related species was extensive during 1963 in northeast Mississippi and was most apparent on alfalfa and crimson clover. Alfalfa weevil was found in ARKANSAS for the first time in 1963. The first specimen was taken in Mississippi County on May 6. As of the end of 1963, the weevil had been found in four counties, all on the eastern border. Six adults per 100 sweeps was the highest infestation found in the State.

Alfalfa weevil was found in 10 additional OHIO counties in 1963. The counties were Coshocton, Licking, Ross, Perry, Fairfield, Pickaway, Fayette, Highland, Pike and Adams, making a total of 30 counties known to be infested. Severe damage occurred in 6 counties adjacent to the Ohio River. Eggs hatched over a long period of time and larvae were present in numbers until mid-June. Thus, damage occurred on both first and second cuttings of alfalfa in Ohio. A special survey in southern ILLINOIS did not reveal any larvae, adults or damage by this weevil.

Alfalfa weevil was found damaging to alfalfa in Whitman and Asotin Counties, WASHINGTON, during 1963. This is the first commercial damage to be reported in the State. In OREGON, moderate to severe damage to alfalfa occurred in eastern and southern counties. Infestations were found for the first time in the Summer Lake Refuge area of Lake County. A few adults were found the second week of April in Clearwater River area of IDAHO. Considerable injury was recorded in Bannock County, southeast, but populations appeared light in Canyon County, southwest, in mid-May. Adult activity and egg laying began early in March in all areas of NEVADA except the most northern and southern ones which were later and earlier, respectively. Larval development in Nevada was generally normal, with peak populations occurring in the latter part of June. In some areas, larval development was prolonged and in most areas adults were present in unusually high numbers throughout much of the growing season. Pahranagat Valley, Lincoln County, infestations and damage were heavy for the second consecutive year. In areas of Churchill, Douglas, Lyon, Pershing and Washoe Counties, recommended chemicals for adult control failed to give satisfactory results. In UTAH, control failures, due to resistance of the adults to specific chlorinated hydrocarbon insecticides, occurred again for the third season in the Smithfield-Richmond area of Cache County and in some Box Elder, Sanpete and other areas, even more extensively than in 1962. Over most of Utah, early spring treatments with these materials continued to give control. Damage to second-crop alfalfa was more common than formerly. Alfalfa weevil was again the most damaging crop pest in WYOMING. Adults resistant to certain chlorinated hydrocarbon insecticides have been found in Big Horn County. These weevils are 60 times more resistant to certain insecticides than susceptible strains. Infestations were more severe in Wyoming than in 1962. In a three-county area of MONTANA (Yellowstone, Carbon and Stillwater), alfalfa weevil, which has been effectively controlled for some 14 years, is now resistant to two recommended chlorinated hydrocarbon insecticides. The weevil is spreading into areas where it was not previously present in Montana. Lake and Ravalli Counties have increased populations. Gallatin County is now almost completely infested.

Alfalfa weevil caused noticeable damage to alfalfa during the summer in Sandoval County, NEW MEXICO. Adults and larvae were generally difficult to find. Heavier infestations were found in the Farmington-Aztec area of San Juan County and the Chama area of Rio Arriba County. Alfalfa weevil damaged alfalfa 1-12 percent in some areas of COLORADO, with the highest loss occurring in Weld County where controls were not effective when applied as an early spring treatment and there were failures when controls were applied after the first cutting was removed. Only trace numbers were found in KANSAS. Infestations in some areas of the panhandle of NEBRASKA ranged from zero to six larvae per 10 sweeps in some cases during May. Second-growth alfalfa in a field in Sioux County was destroyed in July. Adjacent fields had areas 30 to 40 feet around hay stacks severely damaged. In SOUTH DAKOTA, first to fourth-stage larvae of alfalfa weevil were collected in the west central region of the State during the spring survey. Populations at this time were generally at a noneconomic level, but extreme infestations of up to 700 larvae per 100 sweeps did exist.

CLOVER LEAF WEEVIL (Hypera punctata) caused more damage to clover in ILLINOIS than in 1962. An estimated 20,934 acres were treated. The highest population recorded in any field was 64 per square foot. Moderate numbers of larvae caused some damage to alfalfa and clover in eastern NEBRASKA in early April, but the insect was not important in UTAH and only trace numbers were recorded in KANSAS. It caused little damage in OKLAHOMA and only observed on alfalfa and clover in MISSOURI. Larvae were prevalent in alfalfa and clover fields in all sections of MARYLAND and caused noticeable but not economic damage.

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) adult populations varied 0-60 (averaged 12) per 100 sweeps from April 29 to May 2 in ILLINOIS, and one red clover field had 90 percent of the stems infested by larvae. By May 20-23, adults in the east-southeast district of Illinois varied 0-80 (averaged 15) per 100 sweeps and in the southeast district 0-140 (averaged 28) per 100 sweeps. Many of the overwintering adults had disappeared by this time and new adults were emerging. From 70 to 100 (average 90) percent of the red clover stems examined in the east-southeast district showed signs of larval feeding and 100 percent of the stems examined in southeast Illinois showed larval feeding. An examination of 10 stems chosen at random from each of 3 randomly selected fields showed that 95.4 percent of the buds were killed and the remaining buds or stems were so badly damaged that they would never produce a good head. In MARYLAND, larvae of lesser clover leaf weevil again caused noticeable injury to the axils and buds of the first growth of red clover in most sections. Light to heavy infestations were noted on crimson clover in the Piedmont area of GEORGIA, and the pest caused some damage to crimson clover in ALABAMA. Also in the latter State, lesser clover leaf weevil was the predominant pest of white clover. This crop is grown in Alabama as a grazing crop in mixtures. It was not attacked by clover head weevil (Hypera meles). In NEBRASKA, adults of lesser clover leaf weevil averaged 2 per 10 sweeps in the central and eastern areas on legumes in mid-April.

CLOVER HEAD WEEVIL (Hypera meles) was heavy on crimson clover in ARKANSAS, up to 150 per 100 sweeps in the southwest area in mid-April. This weevil is the major pest of crimson clover in ALABAMA. However, the pest was not as serious in 1963 as in the three preceding years. Unspecified CLOVER WEEVILS were unusually abundant during mid-April in SOUTH CAROLINA. They are a pest of the first magnitude in that State in the production of crimson clover seed.

SWEETCLOVER WEEVIL (Sitona cylindricollis) populations increased generally throughout MINNESOTA. In the Red River Valley, counts after a lull of a few years, increased sharply in some fields. Populations in NORTH DAKOTA were present on sweetclover early in the season, but relatively little feeding was observed. In SOUTH DAKOTA, this weevil was reported as an economic pest only once when a farmer mowed his sweetclover reserve acres. The weevils then migrated into an adjoining field of alfalfa which resulted in an estimated 10 percent loss of the forage crop. Populations in NEBRASKA remained 2-15 per 10 sweeps in eastern areas from April through November. Light to moderate damage occurred in the spring in northern and northeastern areas of the State. Sweetclover weevil was approximately normal in number and/or injury in UTAH.

A LEGUME CURCULIO (Sitona scissifrons) was very destructive to breeder plantings of alfalfa at the Fairbanks Experiment Station in ALASKA in June. Populations of S. scissifrons were present on alfalfa early in the season in NORTH DAKOTA, but relatively little feeding was observed.

PEA LEAF WEEVIL (Sitona lineata) was more numerous than usual on alfalfa in the northwestern part of WASHINGTON, but damage to legumes in the Willamette Valley of OREGON was about the same as in 1962. However, pea leaf weevil was found feeding on clover in Jackson County, Oregon, which is a 175-mile southern extension of its infestation range. CLOVER ROOT CURCULIO (Sitona hispidula) was observed on clover and alfalfa in MISSOURI, trace numbers were found in KANSAS, and was about normal for the year in UTAH.

First adults of CLOVER SEED WEEVIL (Miccotrogus picirostris) were swept from roadside white clover in Whitman County, WASHINGTON, in late May. The buildup in seed fields was delayed a week beyond development of brown blooms; therefore, there were subsequent control timing problems in the southeastern part of Washington.

VETCH BRUCHID (Bruchus brachialis) was found for the first time in Williamson and Brown Counties, ILLINOIS, during 1963. In TEXAS, it caused its usual amount of damage to seed vetch in the State.

PALE-STRIPED FLEA BEETLE (Systena blanda) caused trace amounts of loss to alfalfa in scattered localities of COLORADO; and a SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata tenella) adults were relatively abundant in alfalfa in Dona Ana, Sierra, Valencia, Bernalillo and Sandoval Counties, NEW MEXICO. BEAN LEAF BEETLE (Cerotoma trifurcata) was present on lespedeza in ALABAMA, but it is not considered a damaging pest.

Various species of BLISTER BEETLES were observed on clover and alfalfa in MISSOURI during 1963. ASH-GRAY BLISTER BEETLE (Epicauta fabricii) was first observed on alfalfa in ILLINOIS in the west-southwest district the week of May 13-16, and by early June, it averaged 12.5 per 100 sweeps in clover and alfalfa in the central district of that State. By the middle of July, MARGINED BLISTER BEETLE (E. pestifera) and a STRIPED BLISTER BEETLE (Epicauta sp.) were common in clover and alfalfa throughout the northern half of Illinois. By late August, blister beetles, now predominantly BLACK BLISTER BEETLE (E. pennsylvanica), were abundant in most areas of Illinois. There were reports from the northwest, central and southwest districts of the State of cattle refusing to eat "greenchop", apparently due to the presence of crushed blister beetles. Four or five beetles per sweep were common, with 20 or more reported in some sweeps. In WISCONSIN, adults of black blister beetle began appearing about July 24 and became abundant in many alfalfa fields in the southern area; counts ranged as high as 18 per sweep. A rapid decline in numbers occurred in mid-October. Ash-gray blister beetle and black blister beetle were moderately abundant on alfalfa in southern NORTH DAKOTA; and Epicauta sp. caused minor damage to alfalfa foliage in Bernalillo and Valencia Counties, NEW MEXICO.

PEA APHID (Acyrthosiphon pisum) populations were moderately abundant on forage crops early in the spring in the Finger Lakes area of NEW YORK, reaching maximum levels of about 100 per sweep. As per usual, these early levels dropped to 20 per sweep in August. Populations of the aphid were generally low in NEW JERSEY throughout 1963. In scattered fields of alfalfa in the southern area, the population built up to economic levels during late May, but control was achieved through a combination of timely cutting plus an increase in the numbers of lady beetles and syrphids. Pea aphid was quite abundant early in PENNSYLVANIA, but was rapidly reduced by parasites/predators. It was light in alfalfa-clover-timothy mixtures in RHODE ISLAND in May, and built up somewhat in June but did not cause serious damage. Pea aphid was first noted in DELAWARE alfalfa on April 8 in New Castle County, but no significant increase occurred until early May. Very high populations occurred on alfalfa only in a few isolated fields in the State. Spring populations were about normal in MARYLAND, but somewhat more variable than usual with damage ranging from light to heavy. During August and September, heavy numbers of from 100 to 500 per sweep were collected from alfalfa in Baltimore, Frederick and Worcester Counties. Pea aphid was present on alfalfa throughout VIRGINIA during the spring, but it caused little damage.

Pea aphid populations were at their usual relatively low levels during the spring and summer in OHIO, but they increased tremendously in October. Counts in INDIANA ranged from 25 to over 200 per sweep on alfalfa in several counties about mid-May. In ILLINOIS, populations were generally low throughout the year. Some fields of alfalfa in the southern area had as many as 550 per sweep in late April and early May, but soil moisture was generally good and little damage was evident. Heavy rains and hay harvest eliminated the threat with few treatments necessary. Populations later built up to 300-400 per sweep in some areas of Illinois, but little damage was done. An estimated 13,925 acres were treated in that State in 1963. Eggs of pea aphid hatched in WISCONSIN by April 8. The first winged form appeared in that State in mid-May. Populations remained at about 30-60 per sweep in most Wisconsin alfalfa and showed an upward trend in the fall. Populations fluctuated considerably according to the area and stage of crop. In MINNESOTA, pea aphid populations were extremely high in alfalfa by the end of May and remained so until early August. Predator populations were high also, but they were unable to reduce aphid numbers. Pea aphid is not considered an economic insect on alfalfa normally in Minnesota. During a six-week drought in the eastern area, some fields showed aphid feeding damage. Populations reached very high numbers on alfalfa in southeast NORTH DAKOTA, but alfalfa was relatively free of pea aphid in SOUTH DAKOTA except for an occasional heavy infestation at various times throughout the season. In NEBRASKA, populations fluctuated from 4 up to 600 per 10 sweeps on legumes, but no damage was reported.

High pea aphid populations (15-300 plus per sweep) damaged alfalfa and clover throughout southwest MISSOURI during the latter part of April. Except for this two or three-week period in the southwest, pea aphid was not an economic problem in Missouri during the year. Pea aphid became heavy in ARKANSAS during the spring season, with some alfalfa being treated. The pest was very light in the fall. In KANSAS, pea aphid was locally heavy in areas in the eastern one-half of the State in the spring. Droughty conditions compounded the effect. Disease and parasites reduced populations to noneconomic levels in Kansas by mid-May. Pea aphid was present on overwintering alfalfa in OKLAHOMA, but counts remained low throughout January and February. By late March, populations increased until damaging numbers requiring control measures were present during April and early May. Light, noneconomic populations generally existed for the remainder of the season in Oklahoma. Pea aphid and COWPEA APHID (*Aphis craccivora*) attacked legumes generally in TEXAS, and were particularly heavy in Brazos County.

Pea aphid was generally light on alfalfa in NEW MEXICO during the spring and fall, but occasional heavy infestations required treatements in the Pecos and Mesilla Valleys. The aphid caused one percent loss to alfalfa in western COLORADO and in Larimer and Weld Counties, same State. Hymenopterous parasites kept pea aphid populations reduced to a moderate level most of the season in Colorado. However, pea aphid populations in WYOMING were markedly above those found in 1962. The heaviest infestations in alfalfa were found in Goshen, Park, Big Horn and Fremont Counties. The greatest populations were found in late August. Pea aphid was another pest of alfalfa in MONTANA in the late summer over most of the State. Populations in Lewis and Nez Perce Counties, IDAHO, became rather high in late July, with alfalfa stands in the Lewiston area being retarded. However, the pest was extremely low on alfalfa throughout southern Idaho at this time in marked contrast to populations encountered during the past several years. Alates appeared on alfalfa in northwestern WASHINGTON by late April and apterae were present in the eastern area by May. The aphid increased rapidly on alfalfa raised for seed in central Washington during June but it was less severe than for the past three years. In OREGON, unusually low populations of pea aphid were present during 1963, and no reports of economic damage to alfalfa were received from any area of the State. Pea aphid was generally light on alfalfa in Fresno, Los Angeles and Siskiyou Counties, CALIFORNIA. Populations in NEVADA were generally lower than in 1962 except in alfalfa seed fields in Humboldt County where they were normal and in Fish Lake Valley, Esmeralda County, where populations and damage were severe in late July. Pea aphid was approximately normal in numbers on alfalfa in UTAH during 1963.

A few SPOTTED ALFALFA APHID (*Therioaphis maculata*) alates were found in vacuum net collections on alfalfa in the lower Yakima Valley of WASHINGTON on August 13. There was apparently a limited migration into this area, but the pest failed to develop into large enough populations to be detected in limited surveys or to cause damage. Spotted alfalfa aphid continued to be of no economic importance in OREGON in 1963. An occasional specimen could be found in Jackson County. In CALIFORNIA, only an occasional flareup of this aphid occurred in local areas. It was generally light in Imperial, Orange, Merced, Los Angeles, Butte and Riverside Counties. Populations and damage were below normal in southern NEVADA, and no infestations were reported in the central and northern parts of the State except for one small, localized infestation in experimental plots in southern Washoe County. The population level in Nevada was the lowest since 1957. Spotted alfalfa aphid was below average in numbers or importance during 1963 in UTAH, and populations were much lighter on alfalfa in NEW MEXICO in 1963 with the exception of scattered fields where populations built up and chemical treatment was necessary.

Spotted alfalfa aphid occurred generally in TEXAS, but it did not cause significant damage. A complex of spotted alfalfa aphid, pea aphid and cowpea aphid heavily damaged alfalfa in Bossier Parish, LOUISIANA, in March. Spotted alfalfa aphid was dominant and probably caused most of the damage. In OKLAHOMA, heavy populations of spotted alfalfa aphid were present in overwintering alfalfa in the northwest in early January, but cold weather reduced populations which remained low until mid-April when heavy populations required controls. Moderate infestations continued in Oklahoma until early May when populations declined and remained light until late June when populations again increased in the southwest. Counts were down during July and August and increased to damaging proportions again in early September and continued high, especially on seedling alfalfa, throughout the fall until early December. Spotted alfalfa aphid first appeared in KANSAS in the southern area in mid-May and in the extreme northern counties about the same time. Those in the northern areas were assumed to be originating from overwintering eggs laid in the fall of 1962. Sexual forms were found in the fall of 1963 in Decatur. Phillips, Smith and Jewell Counties, Kansas. Populations in the fall of 1963 were generally at the highest level noted for several years and insecticides were applied in several locations. An unidentified fungus disease reduced numbers in many cases. Lower populations and reduced damage were noted on resistant varieties. The aphid did not cause a problem statewide in COLORADO, but losses to alfalfa did occur in the Arkansas Valley on fall-planted alfalfa and there was some damage to spring-planted alfalfa during September in Weld County.

First to fourth-stage nymphs of spotted alfalfa aphid were found in Howard County, NEBRASKA, April 12. Populations increased to about 10 per 10 sweeps in early May and remained at or below this level in most areas of Nebraska through September. In spite of hot, dry conditions in mid-summer, populations did not build up. Highest counts of 500 per 10 sweeps were in Boyd County in late October. Sexual forms again were readily found in most areas of the State in late November. In SOUTH DAKOTA, the first collection was made on May 14 in Bon Homme and Charles Mix Counties. This collection was two weeks later than the first 1962 collection date. June populations ranged from 4 to 320 aphids per 100 sweeps in the southeast and central regions of South Dakota. The extreme western collections were in Jones, Mellette and Todd Counties in the south central area. Sexuals were being collected in Yankton, Charles Mix and Hutchinson Counties by the first of November.

Spotted alfalfa aphid caused some damage to alfalfa in WISCONSIN, although the extent could not be accurately determined since the highest numbers were present in sparse alfalfa fields where growth was inhibited naturally by drought. Some honeydew was present and leaf drop prevalent in heavily infested fields. Distribution surveys in Wisconsin were questionable, significant populations apparently being present in the Sugar River area and in the area adjacent to the Wisconsin River in Dane, Iowa, Sauk and Richland Counties. The aphid was first discovered in 1963 near Brodhead in Green County on August 6. The population built up to as high as 1,500 per sweep in mid-October before it decreased. Considerable egg laying occurred in the area where the highest populations prevailed. In ILLINOIS, spotted alfalfa aphid was found in Mason County, central area, on April 17. The infestation remained localized and populations were very low throughout the season. Another infestation was found in a small, rather isolated, alfalfa-growing area along the Ohio River in Hardin and Pope Counties in October. Populations varied 6-440, averaged 176, per sweep. Some of the alfalfa was sticky with honeydew, showed slight discoloration and leaf curling and appeared to be stunted. Spotted alfalfa aphid was found in only one field (Floyd County) of those examined in southern INDIANA counties in May. It was not found in the field infested during fall of 1962 in Harrison County, same area. Surveys in 10 other southern counties were negative. Low populations were present in southwest MISSOURI during the late summer and early fall. These populations increased until most unprotected fall seedings in the southwest area of Missouri were damaged by this insect. Infestations in ARKANSAS were heavier than normal, possibly due to dry weather. Medium infestations occurred in the southwest part of Arkansas during the spring. Extremely heavy infestations occurred in the northern part of the State in the fall.

Spotted alfalfa aphid caused severe damage to fall-seeded alfalfa in several VIRGINIA counties in October and November. This was the first year such damage has been inflicted in Virginia since 1959. In GEORGIA, infestations were more severe in late summer and fall than in recent years. The growing season in late summer and fall was very dry in Georgia.

SWEETCLOVER APHID (Therioaphis riehmi) was about normal for the year in UTAH, and light on sweetclover in southeastern NEBRASKA.

MEADOW SPITTLEBUG (Philaenus spumarius) populations were relatively low throughout the season in ILLINOIS. The fall survey showed an increase in the State average from 0.20 adult per sweep in 1962 to 0.43 in 1963. The entire State rates noneconomic except for 6 counties in the northwest district which rates moderate. An estimated 19,467 acres were treated to control this insect in Illinois in 1963. Of these acres, 17,080 were in districts which had low populations and the treatments were probably not profitable from the economic standpoint. In MICHIGAN, nymphs and spittle masses appeared to be more numerous in southern areas than during other recent years. The first adults were reported from Montcalm County on June 8. Populations of meadow spittlebug continued at a low level in OHIO except in several areas in the central part of the State. Fall survey results indicate slight increases in populations are to be expected in 1964. Populations of meadow spittlebug were higher than the very low levels found in 1962 in NEW YORK, averaging about 25 spittle masses per square foot in birdsfoot trefoil fields. Meadow spittlebug was not abundant generally in PENNSYLVANIA, but in certain areas and in some fields heavy infestations occurred. Populations generally ranged from light to moderate on alfalfa and red clover in MARYLAND, except in western sections where many red clover fields were heavily infested during the late spring. In DELAWARE, nymphs were first noted on alfalfa in New Castle County on May 7, with the first adults of the season present during the second week of June in New Castle and Kent Counties. Adults averaged between 50 and 60 per 100 sweeps in many fields in New Castle County during late June and July. Meadow spittlebug was not a problem on alfalfa in NEW JERSEY during 1963, and no reports of damage were received.

POTATO LEAFHOPPER (Empoasca fabae) caused noticeable yellowing in many WISCONSIN alfalfa fields, although this condition was more apparent on higher land and marginal areas of fields. Noticeable numbers appeared by mid-May, and nymphs became common by mid-June. In NEBRASKA, light, scattered populations were commonly found in most areas causing some yellowing of alfalfa. The first specimen of the season in ILLINOIS was taken in a windsock at Urbana on April 21. From zero to 40, average 21, adults per 100 sweeps were found in alfalfa in the central, west, west-southwest and southwest districts of Illinois April 23-24.

The main flight apparently entered the State on heavy winds May 8. The following week, May 13-16, populations varied from zero to 3,400 per 100 sweeps. Populations dropped to very low numbers, 0-180 per 100 sweeps, in late May and early June, then gradually built up to populations of 50-400 adults and 0-4,500 nymphs per 100 sweeps in the west-southwest district in early July, and 200-8,000 adults and 200-3,000 nymphs per 100 sweeps in the north July 15-18. Although some yellowing of alfalfa was noted throughout Illinois, only a small part of it could be attributed to potato leafhopper. Some infestations were reported on clover and alfalfa in MISSOURI during 1963.

Potato leafhopper caused severe yellowing and stunting of alfalfa in Addison and Chittenden Counties, VERMONT. In NEW YORK, potato leafhopper was heaviest on alfalfa in the southeastern part of the State, but the insect did not build up in July due to the wet conditions. In the central New York counties of Tompkins, Seneca, Onondaga, Ontario and Wayne, counts were 0-12 per 25 sweeps and little "yellows" was evident except in droughty areas. Several fields of alfalfa in Burlington County, NEW JERSEY, required treatment, and damaged fields were observed in Gloucester, Camden and Cumberland Counties, same State. Potato leafhopper was above normal in MARYLAND and caused characteristic yellowing of alfalfa in many fields over the State. Light to moderate numbers were also present on clover in all sections during the summer.

Light populations of a LEAFHOPPER (Erythroneura sp.) occurred on alfalfa in Fresno County, CALIFORNIA, and in a few other locations in northern California. COTTON FLEAHOPPER (Psallus seriatus) was present in Guadalupe County, TEXAS, vetch fields.

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) infestations in ARIZONA were heavy from July through October. Severe girdling was evident on alfalfa and counts of 1,000 per 100 sweeps were common. Infestations occurred in late July and September in the Brazos-Burleson County area of TEXAS and considerable stem girdling was noted. Populations in OKLAHOMA were present from late August through early December. The insect was about normal in number and/or injury during 1963 in UTAH.

LYGUS BUGS (Lygus spp.) occurred in moderate to heavy numbers on alfalfa in Guadalupe, Hays, Terry and Gaines Counties, TEXAS. They were first noted on alfalfa in OKLAHOMA in late March. By mid-April, infestations were common in most Oklahoma alfalfa, with populations increasing to heavy numbers in various areas by early May. Counts declined during June and July and increased again from August to October. Seed alfalfa production in COLORADO was reduced somewhat by lygus bugs in Delta, Garfield, Mesa and Montrose Counties. Populations in alfalfa seed fields in Mesilla and Pecos Valleys of NEW MEXICO built up to point where most growers were required to treat. The heaviest infestations in ARIZONA occurred between June and October although populations could be found through the year. Lygus bugs were numerous and damaging to many crops in CALIFORNIA and required considerable control. The problem of resistance made control difficult in some areas. Alfalfa, clover and safflower were the cereal and forage crops most affected. Populations were normal in NEVADA and UTAH, although seasonal increases began about two weeks later than usual in the former State. In WYOMING, slight damage to alfalfa seed crops was found throughout the State. Infestations were about equal to those found in 1962. The highest numbers were found during July. L. hesperus and L. elisus increased rapidly on alfalfa grown for seed in eastern WASHINGTON by mid-June.

GARDEN FLEAHOPPER (Halticus bracteatus) was extremely numerous on kudzu during the year in SOUTH CAROLINA.

TARNISHED PLANT BUG(Lygus lineolaris) was again very abundant in alfalfa and clover in MARYLAND, especially those fields near maturity in all sections. In DELAWARE, the first overwintered adults were noted on alfalfa in late March and the first eggs of the season were found April 22 in new alfalfa growth. Counts on alfalfa and soybeans averaged between 20 and 30 adults per 100 sweeps throughout most of the season except in late August when populations on those crops increased to an average of 60 adults per 100 sweeps. Tarnished plant bug caused some damage to alfalfa and trefoil in VERMONT, and counts of 1-2 per sweep were found on alfalfa in the Finger Lakes area of NEW YORK in August. In NORTH DAKOTA, the species was relatively numerous on alfalfa and sweetclover in the eastern area, and adults and nymphs ranged 4-20 per 10 sweeps throughout NEBRASKA on legumes.

ALFALFA PLANT BUG (Adelphocoris lineolatus) was reported in one of the alfalfa seed producing areas of Powder River County, MONTANA, and was relatively numerous on alfalfa and sweetclover in eastern NORTH DAKOTA. Counts in NEBRASKA were low. 5-50 per 10 sweeps, with no economic damage reported. Populations in WYOMING were about the same as in 1962, with the greatest numbers being found in Sheridan, Johnson, Fremont, Platte and Goshen Counties. RAPID PLANT BUG (A. rapidus) was again very abundant in alfalfa and clover fields in MARYLAND, especially those near maturity in all sections, and it attacked crimson clover in ALABAMA in association with other plant bugs including tarnished plant bug. Populations of rapid plant bug in NEBRASKA were approximately 5 to 20 per 10 sweeps in most areas of the State where the species occurs, with no economic damage reported. SUPERB PLANT BUG (A. superbus) was about normal for the year in UTAH.

STINK BUGS were more prevalent during 1963 in CALIFORNIA than formerly. Alfalfa was the principal crop affected.

ALFALFA CATERPILLAR (Colias eurytheme) was unusually abundant on alfalfa throughout most of NEW MEXICO, with the heaviest infestations being found in northern Eddy County where many growers had to treat. All alfalfa-producing areas of ARIZONA were heavily populated by flights of adults, but larval damage was not as serious as expected although many individual fields were heavily damaged. In CALIFORNIA, light to medium, spotted infestations occurred over the State in alfalfa plantings. Populations in NEVADA were low as usual except in the Virgin Valley of Clark County where severe damage resulted in the loss of approximately one cutting in September and early October. Alfalfa caterpillar was about normal for the year in UTAH, and the pest caused trace amounts of loss to alfalfa in scattered areas of COLORADO. Small to moderate infestations were found throughout WYOMING on alfalfa. Damage was very slight and no control efforts were used. The highest populations were found in Goshen, Platte, Laramie, Fremont and Big Horn Counties. Populations were generally smaller than in 1962 in Wyoming. Adult and larval activity was found in central and eastern NEBRASKA in mid-April. Unusually high adult numbers were present in legumes and roadsides in the northeast area of Nebraska in August and September. It was present throughout the summer on alfalfa in MINNESOTA, but increased sharply in August. High populations occurred during August and September; the highest in many years. Vigorously growing alfalfa at that time showed little injury. In WISCONSIN, larvae became noticeable in alfalfa in the southwest about mid-July and ranged upward to 3-6 per sweep as late as the first week of November. Light numbers became active in OKLAHOMA in late April and continued light until mid-September. Localized, heavy populations were present during late September and early October in that State. Alfalfa caterpillar was observed on alfalfa in MISSOURI; fairly common on alfalfa in New Castle County, DELAWARE; light to moderate during the season on alfalfa in all sections of MARYLAND; and present on alfalfa in ALABAMA.

ALFALFA LOOPER (Autographa californica) was evident on alfalfa plantings in a few CALIFORNIA locations; and light infestations were found on alfalfa near Artesia, Eddy County, NEW MEXICO. Populations of this insect in WYOMING were much lower than in 1962. Very little damage to alfalfa was noted, and very few, if any, controls were applied to alfalfa fields in the State.

GREEN CLOVERWORM (Plathypena scabra) larvae were rather common on alfalfa throughout DELAWARE by mid-June. Larval populations generally increased on alfalfa during late August, with counts averaging between 30 and 50 per 100 sweeps. Numbers on alfalfa in MARYLAND were about normal, ranging from light to moderate in all sections during the summer. Green cloverworm was observed on clover and alfalfa in MISSOURI and was not of economic importance on alfalfa in KANSAS. Light populations were active from early April to mid-September in OKLAHOMA when populations increased to 150-200 per 10 sweeps in the north central area. Moderate counts continued until late October with only localized damage noted. It caused light to moderate damage to alfalfa throughout TEXAS, and was present on crimson clover and lespedeza in ALABAMA.

FALL ARMYWORM (Laphygma frugiperda) infestations were heavy on alfalfa in ARIZONA during August and September, and infestations of this species and CORN EARWORM (Heliothis zea) damaged forage crops severely in southern Nevada. Corn earworm activity started on alfalfa in OKLAHOMA in late April and by mid-May infestations were common on that crop in all southern sections of the State. Infestations of corn earworm continued to increase until heavy populations were damaging alfalfa and other crops during late June. Populations decreased somewhat during July and early August in Oklahoma, but reached a second peak of activity during late August. Heavy infestations were again present in alfalfa in the north central and northwest parts of Oklahoma during late September and activity continued into early November. Corn earworm also damaged alfalfa and vetch in north central and central TEXAS during 1963.

ARMY CUTWORM (Chorizagrotis auxiliaris) severely damaged several NEVADA alfalfa fields; in Churchill County in March and Humboldt County in May. Moderate infestations of this pest were found in WYOMING in late April and early May. Most noticeable damage occurred to alfalfa. The largest populations were found in Park, Fremont, Albany, Goshen and Laramie Counties. In general, populations were smaller than the previous year in Wyoming. In NEBRASKA, damaging numbers were found on alfalfa in the southwestern area in April. Heavy moth flights occurred in late May. Little damage was observed on alfalfa in western KANSAS although the pest was abundant in wheat. Army cutworms caused trace amounts of loss to alfalfa in scattered locations of COLORADO; and larvae caused some concern on alfalfa in southwest NORTH DAKOTA.

BEET ARMYWORM (Spodoptera exigua) caused heavy damage to alfalfa in the Brazos-Burleson County area of TEXAS, and light damage in several other Texas counties. It was not of economic importance in KANSAS alfalfa. YELLOW-STRIPED ARMYWORM (Prodenia ornighogalli) caused light to moderate damage to alfalfa throughout TEXAS, but caused little damage in OKLAHOMA. WESTERN YELLOW-STRIPED ARMYWORM (P. praefica) populations were medium to heavy in alfalfa plantings and pasture lands in the Central Valley and northern area of CALIFORNIA.

VARIEGATED CUTWORM (Peridroma saucia) damaged alfalfa in areas of MISSOURI during May. The damage started in the southeast in early May and progressed northward throughout the months. Larval counts ranged from one to as high as 22 per square foot. An outbreak also occurred in northeast ARKANSAS in late April on alfalfa. It was not of importance on KANSAS alfalfa. DARK-SIDED CUTWORM (Euxoa messoria) was very light on alfalfa in Lincoln County, NEBRASKA, in early May. DINGY CUTWORM (Feltia ducens) was abundant on alfalfa in the same Nebraska county at the same time as dark-sided cutworm, but it was noneconomic.

GARDEN WEBWORM (Loxostege similalis) activity began in OKLAHOMA in mid-May and increased to damaging proportions by late June. Except for periodic fluctuations, populations remained at the moderate to heavy level until mid-October in various locations throughout the State. Garden webworm caused light to moderate damage to alfalfa throughout TEXAS and the pest was observed on clover and alfalfa in MISSOURI. In NEBRASKA, garden webworm built up to large numbers on legumes in the eastern half of the State during July and continued through September. Many fields received light to very heavy damage. ALFALFA WEBWORM (L. commixtalis) caused trace amounts of loss to alfalfa in scattered COLORADO locations, and garden webworm and alfalfa webworm were numerous in many alfalfa fields over KANSAS from mid-June until August. Controls were applied in a few cases.

An ALFALFA SEED CHALCID (Bruchophagus roddi) caused considerable localized reduction to alfalfa seed production in OKLAHOMA. Populations in UTAH were about normal for the year.

THRIPS were unusually abundant on many cultivated as well as native hosts in CALIFORNIA. Many infestations occurred in native grasses over the State. WESTERN FLOWER THRIPS (Frankliniella occidentalis) was a pest of alfalfa in a few California locations. Unspecified thrips were heavy on alfalfa in Clark, Lincoln and Nye Counties, NEVADA, in May; and they caused some damage to seed alfalfa in Delta, Garfield, Mesa and Montrose Counties, COLORADO. Several species of thrips were very abundant on alfalfa and clover in MARYLAND, and they were more abundant than usual on clover and alfalfa in ILLINOIS.

FIELD CRICKETS (Gryllus spp.) were a problem in alfalfa plantings in Imperial County, CALIFORNIA, during 1963.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) built up during the late spring in WASHINGTON and caused serious damage to clovers by late June in the central area. It migrated from clovers and other spring hosts to corn during the summer. Unseasonably hot weather in August and September allowed rapid buildup and damage. In IDAHO, this mite was also found generally on alfalfa and clovers in the south central and southwestern part of the State, with counts generally moderate, the latter part of the summer.

MITES in general developed on seed alfalfa in light to medium populations locally in Kern County, CALIFORNIA. Populations of BROWN WHEAT MITE (Petrobia latens) were generally light in the central and northern counties of NEVADA, but damage was medium to heavy on alfalfa in areas of Clark, Lincoln and Nye Counties in April and May. Also in Nevada, BANKS GRASS MITE (Oligonychus pratensis) severely damaged timothy in Lyon County in late April. This was the heaviest infestation since 1960 and the earliest season damage in this area. Populations of Tetranychus spp. were medium to heavy on alfalfa in areas of Clark and Nye Counties and several fields required treatment in March and April. Brown wheat mite was of only minor importance during 1963 on alfalfa in NEW MEXICO. Unspecified SPIDER MITES severely infested red clover throughout VIRGINIA in May, causing rather extensive damage. Specimens collected from Pittsylvania County in June were determined as STRAWBERRY SPIDER MITE (Tetranychus atlanticus). Similar infestations of Tetranychus spp. were recorded on several red clover and hay mixture fields in MARYLAND during June. In DELAWARE, high populations of strawberry spider mite caused severe injury to clover in central Kent County in early June.

LAWN, PASTURE AND RANGELAND INSECTS

Highlights:

SOD WEBWORMS were a problem in lawns in various parts of the country, with populations in several instances being high. They were regarded as the most important lawn and turf pests of 1963 in Missouri, and damage was quite extensive in several Illinois districts. FALL ARMYWORM caused heavy damage, as in 1962, to pasture grass, lawns and several crops in the eastern half of Texas. RANGE CATERPILLAR denuded large areas of rangeland in Colfax and Union Counties, New Mexico, and SAGEBRUSH DEFOLIATOR was heavy in many areas of northern Nevada. CHINCH BUGS severely damaged many lawns in Texas from Corpus Christi to Beaumont along the coast, and into east Texas as far north as Dallas. Heavy populations also developed in several areas of Louisiana. Chinch bugs were somewhat of a reduced problem on ornamental lawns in Florida, but unusually serious infestations were reported from South Carolina. FALSE CHINCH BUGS were prevalent on rangeland, pasture, etc. in California, Nevada and Utah. The SPITTLEBUG (Prosapia bicincta), which has become a major pest of pastures in Florida in recent years, was more spotty in 1963.

A SOD WEBWORM (Crambus luteolellus) caused severe damage to lawns in Burnet and Nueces Counties, TEXAS, during 1963. SOD WEBWORMS (Crambus spp.) were present in damaging numbers in many eastern areas of NEBRASKA; heavy moth flights occurred in early September in Lancaster County. They were regarded as the most important lawn and turf pests of 1963 in MISSOURI. Damage was reported and observed in areas throughout that State. In ILLINOIS, moths were abundant in the eastern area May 25-29 and some larval damage occurred in lawns in June. By August, damage was quite extensive in east, central and west districts of Illinois, with the east-southeast and southeast districts also showing considerable damage. An estimated 2.5 percent of the lawns in Illinois were treated. C. trisectus was less abundant in turf in OHIO than in 1962. Adults of Crambus spp. were in flight in the Kingston and Slocum areas of Washington County, RHODE ISLAND, in late August. Turf specialists in the State were concerned. Sod webworms were responsible for heavy injury to young corn following sod in several central MARYLAND fields; several reports of injury to new lawns were received from Prince Georges County of that State in August. They were locally severe on lawns and cemeteries during August and September in VIRGINIA, especially in central, northern and southwestern areas. Populations of unspecified webworms were high during the summer months in southern NEW JERSEY. Northern and central New Jersey counties initially had moderate infestations which increased to high proportions during August and September.

BRONZED CUTWORM (Nephelodes emmedonia) caused minor damage to lawns in Lancaster County, NEBRASKA, but was abundant on turf in areas of southwestern OHIO. An unidentified CUTWORM was abundant in golf course greens that were aerified in spring of 1963 in Ohio. BLACK CUTWORM (Agrotis ipsilon) caused economic damage to spring-planted alta fescue in Linn County, OREGON, during July and August; and VARIEGATED CUTWORM (Peridroma saucia) damaged some lawn turfs in the Brazos-Burleson County area of TEXAS. ARMY CUTWORM (Chorizagrotis auxiliaris) caused damage to Bermuda grass lawns in Caldwell County, TEXAS, and damaged pasture and hay fields in Douglas County, OREGON, from April to July.

FALL ARMYWORM (Laphygma frugiperda) began building up during late August in TEXAS, and reached a peak during early November. It caused heavy damage to pasture grass, lawns and several crops in the eastern half of the State. This outbreak was comparable to the 1962 outbreak and considerably heavier than in 1961. Light to moderate infestations of fall armyworm were reported on Bermuda grass in GEORGIA and, in NORTH CAROLINA, it damaged a pasture in Pamlico County during late July and newly seeded fescue in Chatham and Randolph Counties during late September. Damage was reported more often than during 1962 in North Carolina. In the Ft. Pierce-Okeechobee area of FLORIDA, at least, populations of caterpillars on pastures were low. This included such pests as GRASS LOOPERS, CUTWORMS and ARMYWORMS. On ornamental turf in Florida, SOD WEBWORMS (Pachyzancla spp.) and fall armyworm were considered routine for the State as a whole. One report from Gainesville listed these pests as negligible on turf in this area. In SOUTH CAROLINA, damage to lawns by ARMYWORM (Pseudaletia unipuncta) and fall armyworm was much less than that noted in most previous years. The first report of heavy fall armyworm damage came from Hampton County on August 15. WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) was medium to heavy on alfalfa and pasture lands in the Central Valley and northern area of CALIFORNIA, and it damaged canarygrass pastures in Coos County, OREGON.

RANGE CATERPILLAR (Hemileuca oliviae) denuded large areas of rangeland in Colfax and Union Counties, NEW MEXICO. In one area near Farley, the larvae were found to move "as an army." Larvae were estimated at 800-900 per square yard along a line with a depth of 8-10 feet. The area infested in New Mexico has increased each year for the past three years. SAGEBRUSH DEFOLIATOR (*Aroga websteri*) populations and damage to *Artemesia tridentata* were heavy in many areas of northern *NEVADA*, especially in Elko, Humboldt and Washoe Counties.

CHINCH BUG infestations were relatively light throughout *NEW JERSEY* during the midsummer months; however, populations increased to high levels the latter part of August through September. A CHINCH BUG (*Blissus* sp.) was found heavily damaging a lawn in Buchanan County, *VIRGINIA*, in early October. This is only the second time that this pest has been reported as damaging to lawns in Virginia since the survey program was started in 1954. HAIRY CHINCH BUG (*Blissus leucopterus hirtus*) was less abundant on turf in *OHIO* than in 1962. In *TEXAS*, *Blissus leucopterus* (subsp. probably *insularis*) severely damaged many lawns from Corpus Christi to Beaumont along the coast, and into east Texas as far north as Dallas. This is essentially the same area infested in 1962, with about the same degree of damage. In *LOUISIANA*, severe chinch bug infestations occurred in St. Augustine grass lawns around New Orleans, Baton Rouge, Lafayette and Alexandria. Insecticide resistance in New Orleans populations has developed to the point that control has become extremely difficult. A heavy infestation was reported on St. Augustine grass pasture near Lake Okeechobee in *FLORIDA*. A control method that apparently worked was raising the water table, then treating with the recommended phosphatic insecticide followed by a second application in two weeks. On ornamental turf in Florida, chinch bugs were still widespread on St. Augustine grass, but were somewhat of a reduced problem from some of the previous years. In *SOUTH CAROLINA*, chinch bugs were unusually serious from midsummer on to lawns, especially those of Charleston grass. Many more complaints have come from the Piedmont area of the State than in past years.

FALSE CHINCH BUGS (*Nysius* spp.) were very prevalent in most areas of *CALIFORNIA*, and heavy populations developed in several local areas of the State where they required treatment. They heavily infested rangeland in Douglas, Elko, Ormsby and Washoe Counties, *NEVADA*, in late July and August, and were more abundant in numbers and/or injury during 1963 in *UTAH*. A heavy migration was noted in the Richmond area of Utah during September.

Many locally heavy infestations of a GRASS BUG (*Arhyssus scutatus*) occurred over *CALIFORNIA*, resulting in migrations to other crops and into residences. In *NEW MEXICO*, heavy populations of another GRASS BUG (*Labops hesperius*) caused extensive damage to crested wheatgrass in reseeding areas near Cuba in the Santa Fe National Forest. Undetermined PLANT BUGS (Miridae) heavily infested *Astralagus mackenzii* in the agronony nursery at Matanuska, *ALASKA*. Hay mixtures were heavily infested by MEADOW PLANT BUG (*Leptopterna dolabratus*) in the central area of *MARYLAND*.

A SPITTLEBUG (*Prosapia bicincta*) has become a major pest of pastures in *FLORIDA* in recent years. It is a problem in coastal Bermuda grass pastures in northern Florida, and it was reported devastating many pastures in southern and central areas of that State in 1962; however, in 1963, infestations were more spotty. Moderate populations occurred in Palm Beach County. At least one heavy infestation occurred in Okeechobee County and reports of heavy infestations were received from Hendry County. In the St. Lucie County area, moderate spring populations of *P. bicincta* that had the potential to become serious, never developed into a severe infestation for some unknown reason. From Bradenton came reports that this spittlebug was greatly reduced from 1962 where it was very heavy on the widely used pasture grasses on the west coast. In the Belle Glade area, at least, heaviest infestations tend to occur during July and August, with adults difficult to find on pastures by mid or late November. Birds are reported as important natural enemies of this insect in Florida. In *GEORGIA*, this spittlebug was a problem on several varieties of lawn grasses during the year. Undetermined SPITTLEBUGS did not build up to the expected population levels on coastal Bermuda grass in *SOUTH CAROLINA* during 1963. Early rains had started a buildup, but the unusually dry weather during July, August and

September was not favorable for them. P. bicincta was found building up in the Clemson area about August, and it damaged holly.

YELLOW SUGARCANE APHID (Sipha flava) was reported at approximately the same abundance level in 1963 at the Ft. Pierce-Okeechobee area of FLORIDA. In the Belle Glade area, populations of this aphid were moderate to heavy on pangola grass in both the spring and fall. Some pastures were seriously damaged where control measures were delayed or not taken at all. LEAFHOPPERS and PLANTHOPPERS in the Belle Glade area of Florida were only of moderate density in the spring and summer, although the latter group of pests became more plentiful than the former as the season advanced. The leafhoppers were mostly Hortensia similis, Graminella spp. and Deltocephalus flavicosta; and the planthoppers were mostly Delphacodes spp. and Sogata spp.

RHODES-GRASS SCALE (Antonina graminis) has not been complained about in the Everglades of FLORIDA since the release of the parasitic encyrtid, Anagyrus antoninae, about seven years ago. Prior to that time, numerous inquiries were received each year. However, Rhodes-grass scale continued to be a problem on Bermuda grass lawns in the Las Cruces area of Dona Ana County, NEW MEXICO, during 1963. It is most severe on Tif-green variety of Bermuda grass in New Mexico. Other coccids of importance reported during the year were Chortinaspis subchortina which heavily damaged St. Augustine grass lawns in Bell County, TEXAS; Odonaspis ruthae which was collected for the first time in central ARKANSAS; and Heterococcus graminicola caused some damage to blue grass being grown for seed in Spokane County, WASHINGTON. The latter species was in association with a thrips, Aptinothrips rufus. GROUND PEARLS were widespread in the coastal areas of SOUTH CAROLINA during the year on lawns.

JAPANESE BEETLE (Popillia japonica) was less abundant in turf in OHIO and reports of damage to turf in RHODE ISLAND and NEW JERSEY were low. The same was true in SOUTH CAROLINA except in newly infested areas. NORTHERN MASKED CHAFER (Cyclocephala borealis) was also less abundant in OHIO turf. GREEN JUNE BEETLE (Cotinis nitida) larvae were lighter in golf courses in northwest ARKANSAS than in 1962, but they caused some damage to newly sown fescue in the same area of the State during the year. Green June beetle was less abundant in most localities of SOUTH CAROLINA, but TEN-LINED JUNE BEETLE (Polyphylla decemlineata) caused localized damage to golf course greens. Also in South Carolina, a GROUND BEETLE (Agonoderus lineola) was reported from golf greens throughout the State and was the subject of much concern.

Square foot soil samples in Onondaga, Ontario and Wayne Counties, NEW YORK, showed little or no change in the average of three grubs of the EUROPEAN CHAFER (Amphimallon majalis) per square foot. Many of the larvae were infected with milky disease.

Several species of MAY BEETLES (Phyllophaga spp.) were turf pests in 1963. P. lanceolata caused considerable localized damage to Johnson grass and alfalfa fields in Caldwell County, TEXAS; P. anxia (first-stage larvae) ranged 2-3 per square foot in upper 6 inches of soil in Cherry County, NEBRASKA, wet meadows in late April; and P. ephilida caused damage to a lawn in Champaign, ILLINOIS. Larval counts in the latter case were 4, mostly third instar, per square foot on August 26. A number of other States reported turf damage, but the species of Phyllophaga involved were not determined.

A REDTOP WEEVIL (Centrinaspis capillatus) was injurious to production of redtop seed in ILLINOIS. Counts varied 0-40 per 100 sweeps in grass and also swept from wheat in the east-southeast and southeast districts May 20-23. Five new county records (Williamson, Hamilton, Saline, Massac, Pulaski) were established in Illinois during 1963. Undetermined BILLBUG larvae were present in bluegrass sod in Lancaster County, NEBRASKA, in September. A BILLBUG (Sphenophorus cicatristriatus) caused considerable damage to lawns and golf courses in the Kennewick-Pasco area of WASHINGTON. It was also reported from Yakima. Populations were as high as 25 larvae per square foot of sod. This species has not previously been recorded from Washington or as a lawn pest. In TEXAS, S. venatus was found in Bermuda grass lawns in Lubbock County. A CERAMBYCID (Derobrachus brevicollis) caused severe damage to Bahia grass in Miller County, GEORGIA. Lighter infestations were observed in Early County, same State. This pest has previously been reported in Bahia grass in Seminole and Dougherty Counties, Georgia.

An AUSTRALIAN SOD FLY (Metoponia rubriceps) was locally heavy in lawns and turf in a limited area of San Francisco and San Mateo Counties, CALIFORNIA. This is the only location where the fly occurs in the State.

Unspecified TERMITES damaged range grass in parts of Webb and Johnson Counties, TEXAS. A CRICKET (Nemobius fasciatus) ranged 6-8 per square yard in field margin in Nemaha County, NEBRASKA, in September. Scattered populations invaded some residential areas of Nebraska in July and August.

Moderate to heavy populations of a BERMUDA GRASS MITE (Aceria neocynodonis) damaged Bermuda grass lawns in NEW MEXICO at Hobbs, Lea County; Carlsbad, Eddy County; and in Las Cruces, Dona Ana County. The mite was recorded in two localities of southern Nye County, NEVADA, during the year. Nye County was not previously known to be infested. In one area of southern Nye County, damage to Bermuda grass was heavy. In RHODE ISLAND, a MITE (Aculus dubius) was common on timothy in a field in Kingston, Washington County, in late April.

MOLE CRICKETS were reported worse than usual in north FLORIDA pastures, including Pensacola Bahia grass. They were also more conspicuous than in average years on ornamental turf during the spring in Florida.

SOYBEAN AND PEANUT INSECTS

Highlights:

CORN EARWORM was, by and large, the major pest of soybeans along the Atlantic Seaboard and the Southern States, but several other lepidopterous pests, such as CABBAGE LOOPER, BEET ARMYWORM, VELVETBEAN CATERPILLAR, GREEN CLOVERWORM and GRANULATE CUTWORM, were damaging locally. LESSER CORNSTALK BORER was the principal pest of peanuts in Texas, and the pest reached damaging proportions in Oklahoma. SOUTHERN CORN ROOTWORM continued to be a problem in some Georgia peanut fields. MEXICAN BEAN BEETLE was locally a problem on soybeans in Maryland, Delaware, Virginia, North Carolina and South Carolina, and was of some importance in Alabama and Georgia. BEAN LEAF BEETLE required a few treatments in Arkansas, and it caused conspicuous foliage injury to soybeans on the Eastern Shore and southern area of Maryland. STINK BUGS are important pests of soybeans in Arkansas, with GREEN STINK BUG occurring statewide and being the most important. STRAWBERRY SPIDER MITE was heavy on soybeans during mid to late summer in Delaware and Maryland, and undetermined mites caused heavy damage to soybeans during August on the Eastern Shore of Virginia.

CORN EARWORM (Heliothis zea) was the most important pest of soybeans in ARKANSAS during 1963, with approximately 20 percent of the acreage being treated primarily for this pest. Tobacco budworm (H. virescens) was also found on soybeans in Arkansas, but of the 689 Heliothis collected on soybeans for determination, only one was H. virescens. In LOUISIANA, corn earworm ranged 6-24 per 30 feet of row on soybeans in the east central area, but was generally low in the northeast. The insect was rather general throughout the peanut-growing areas of TEXAS and infestations ranged from light to heavy. Corn earworm and cabbage looper (Trichoplusia ni) were the major pests of soybeans during 1963 in ALABAMA. The corn earworm complex became a serious pest from the central counties southward. Corn earworm caused quite a lot of damage to soybean pods in GEORGIA and infestations were general over the State. In SOUTH CAROLINA, corn earworm caused the greatest amount of damage to soybeans, but it was much less noticeable than usual. Large buildups of moths in early August failed to materialize as heavy feeding on either leaves or pods. However, the pest did seriously damage soybeans in the coastal area of South Carolina the last half of July and it heavily damaged widely scattered fields of soybeans in the Coastal Plains area of NORTH CAROLINA during the latter half of August and the first half of September. Most fields examined in North Carolina had 0-5 larvae per 25 feet of row. A heavily infested field in Washington County had 48 larvae per 25 feet of row. Infestations on soybeans in the eastern area of VIRGINIA were about as widespread and severe as in 1962 and, in general, were controlled before extensive damage occurred. Damage to soybean pods in MARYLAND was light, considerably below that of 1962. However, larvae did cause considerable feeding injury to soybean pods in late-planted fields during September in Kent and Sussex Counties, DELAWARE.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) caused heavy, local damage to peanuts in Austin County, TEXAS, in 1963. For the second straight year, this species was the principal pest of peanuts in Texas. It was particularly heavy in the Red River, north central and west cross timbers areas of the State and became a late-season problem in the southern peanut areas of Texas. In OKLAHOMA, the borer reached damaging population levels for the first time on peanuts. Infestations varied considerably, but of 12 counties sampled, 8 had one or more fields of peanuts showing at least 8 percent nut damage. In SOUTH CAROLINA, far fewer complaints were received regarding lesser cornstalk borer on such crops as soybeans, cowpeas, sorghum and millet than in previous dry summers.

GREEN CLOVERWORM (Plathypena scabra) larvae were present on soybeans in most areas of DELAWARE by early August. Populations generally increased on soybeans during late August, with counts averaging between 30 and 50 larvae per 100 sweeps. In MARYLAND, numbers were about normal on soybeans, ranging from light to moderate in all sections during the summer. Green cloverworm was fairly numerous on SOUTH CAROLINA soybeans during July, and it was present on that crop in both ARKANSAS and LOUISIANA during the season although not of economic importance.

CABBAGE LOOPER (Trichoplusia ni) never did become extremely abundant on soybeans in SOUTH CAROLINA. As early as August 1, disease was noted taking its toll. In late August, however, the virus disease was much more noticeable in cotton than in soybeans on loopers. Both cabbage looper and BEET ARMYWORM (Spodoptera exigua) caused light to moderate defoliation of soybeans in GEORGIA. Damage by the latter species occurred in the southwest area. Beet armyworm and GRANULATE CUTWORM (Feltia subterranea) were unusually abundant on and injurious to soybeans in Charleston County, SOUTH CAROLINA, during the last half of July. Growers reported beet armyworm not satisfactorily controlled with insecticides commonly used on that crop. Granulate cutworm caused serious injury to young soybean plants growing in fields planted to spring-crop tomatoes. VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) caused light to moderate defoliation of soybeans in GEORGIA, but did very little damage in SOUTH CAROLINA because it appeared late in the season. Velvetbean caterpillar and LOOPERS, predominantly Pseudoplusia includens, were present on soybeans in several LOUISIANA parishes, but counts were not high. In ALABAMA, cabbage looper and corn earworm were the major pests of soybeans. It was felt, however, that a looper other than cabbage looper was present in soybeans in the large acreage in the southwest area of the State. Controls became most difficult if not impossible. Other lepidopterons of lesser importance present on soybeans in Alabama were velvetbean caterpillar, FALL ARMYWORM (Laphygma frugipdera), SALT-MARSH CATERPILLAR (Estigmene acrea) and beet armyworm. The beet armyworm was first reported in cotton in Alabama in 1962 and was a serious foliage pest to isolated fields of soybeans in the central and southwestern sections of the State in 1963.

BLACK CUTWORM (*Agrotis ipsilon*) and granulate cutworm damaged up to 35 percent of the peanuts in widely scattered fields of the northeast peanut-growing area of NORTH CAROLINA during August and September. Infestations of velvetbean caterpillar, corn earworm and FALL ARMYWORM (*Laphygma frugiperda*) were light to moderate on peanuts in GEORGIA, and SALT-MARSH CATERPILLAR (*Estigmene acrea*) required controls in some peanut fields in Fayette and Waller Counties, TEXAS. Damage to peanuts by RED-NECKED PEANUTWORM (*Stegasta bosqueella*) was light to moderate in GEORGIA, and was considerable in the south central area of OKLAHOMA.

SOUTHERN CORN ROOTWORM (*Diabrotica undecimpunctata howardi*) continues to be a problem in some GEORGIA peanut fields. Known infestations located in Early, Clay, Randolph, Calhoun and Sumter Counties. Populations on peanuts in NORTH CAROLINA were lighter than usual during 1963 due to dry conditions during mid and late summer. Damage to the fruit was later than usual in North Carolina and did not begin until mid-August.

MEXICAN BEAN BEETLE (*Epilachna varivestis*) adults and larvae inflicted heavy foliage and pod injury to several fields of early maturing soybeans in Wicomico and Worcester Counties, MARYLAND, and the beetle caused extensive damage to young soybeans in eastern VIRGINIA early in the season. It was normal in abundance later in the season. Mexican bean beetle was generally not a serious pest of soybeans in NORTH CAROLINA, although heavy lacing of a few fields occurred in some areas. The pest attacked some plots on the Clayton Experiment Station unusually early and it was necessary to apply an insecticide to 6-inch plants. Locally in SOUTH CAROLINA, Mexican bean beetle was the most important pest of soybeans and it caused some serious damage. The beetle was also found causing light to moderate defoliation of soybeans in GEORGIA, and was a pest of lesser importance in ALABAMA.

BEAN LEAF BEETLE (*Cerotoma trifurcata*) adults were again common during the summer in MARYLAND, and it caused conspicuous foliage injury to soybeans on the Eastern Shore and in the southern area. The beetle was detected on soybeans in several VIRGINIA counties. Damage by this species and a LEAF BEETLE (*Colaspis* sp.) was localized on soybeans in SOUTH CAROLINA and confined to areas which had previously grown grass and clover. Bean leaf beetle required a few treatments in ARKANSAS, and light damage was reported on soybeans in NEBRASKA. Bean leaf beetle was also present on soybeans in ALABAMA, but it was not of major importance. The adults of SOUTHERN CORN ROOTWORM (*Diabrotica undecimpunctata howardi*) did considerable feeding on foliage and in blossoms of soybeans in Alabama, but damage from this pest was negligible.

MARGINED BLISTER BEETLE (*Epicauta pestifera*) was heavy locally on soybeans in Bryan County, GEORGIA; and undetermined BLISTER BEETLES were present but did not cause severe damage to soybeans in SOUTH CAROLINA. ALFALFA WEEVIL (*Hypera postica*) adults were found feeding on young soybeans in DELAWARE during June. This was a new host record for alfalfa weevil in that State.

STINK BUGS are important pests of soybeans in ARKANSAS, with GREEN STINK BUG (*Acrosternum hilare*) occurring statewide and being the most important. Other species of stink bugs occurring on soybeans in Arkansas are SOUTHERN GREEN STINK (*Nezara viridula*) and BROWN STINK BUG (*Euschistus servus*). Southern green stink is found mainly in the southeast part of Arkansas. In NORTH CAROLINA, green stink bug and brown stink bug were considerably lower in number on soybeans than in 1962. Counts in central Coastal Plain counties ranged 0-3 per 25 feet of row and counts in several central coastal counties generally ranged 0-8 per 50 feet of row. Unspecified stink bugs were present on soybeans in limited numbers in SOUTH CAROLINA, but severe damage was not reported. Green stink bug lightly infested soybeans in some areas of VIRGINIA during 1963.

TARNISHED PLANT BUG (Lygus lineolaris) was present on soybeans in DELAWARE, and light to moderate numbers of POTATO LEAFHOPPER (Empoasca fabae) were present on soybeans in all sections of MARYLAND during the season.

THRIPS were very abundant on soybeans in MARYLAND, with streaking being noticeable on the young plants. During July in ILLINOIS, many soybean fields had 100 percent of the soybean plants showing light to heavy silvering. In GEORGIA, infestations of thrips were light to heavy on peanuts, but generally lighter than in an average year. Peanut growers are doing a better job of early season insect control in Georgia. Thrips also damaged peanuts in the south central area of OKLAHOMA during 1963.

STRAWBERRY SPIDER MITE (Tetranychus atlanticus) was present on most soybeans throughout DELAWARE by early August, with approximately 4 percent of the fields observed at that time having heavy infestations. However, by mid to late August, many soybean fields had very high populations and were showing rather heavy feeding injury. This spider mite was above normal on soybeans in MARYLAND, and during mid to late summer, several fields on the lower Eastern Shore required treatments. TWO-SPOTTED SPIDER MITE (T. telarius) was common on soybeans in ILLINOIS, with light damage occurring in the west district by late June. Unspecified SPIDER MITES were generally distributed on soybeans on the Eastern Shore of VIRGINIA where they caused heavy damage in August, and unspecified mites caused considerable concern to peanut growers in most all areas of TEXAS during 1963.

SOYBEAN CYST NEMATODE (Heterodera glycines) surveys were conducted in 22 of the major soybean-producing States during 1963. Extensions of infested areas amounting to 22,149 acres were found in the eight previously known infested States. (Arkansas, Illinois, Kentucky, Mississippi, Missouri, North Carolina, Tennessee, Virginia). Surveys in other soybean-producing States have been negative. In the eight States infested with soybean cyst nematode, more than 109,000 acres have been found infested based on soil surveys. In some counties, the infestation has not been delimited, but based on an estimate, there probably are more than 350,000 acres infested. During the 1963 crop season soybean cyst nematode caused some field damage in ARKANSAS, MISSOURI, NORTH CAROLINA and TENNESSEE.

In Missouri, soybean cyst nematode reduced soybean yields an average of 8.5 percent in 434 fields in which damage was observed in 7 known infested counties in the southeastern area during 1963. Losses in individual Missouri fields ranged from a trace to near complete failure. Several badly damaged fields were plowed up and replanted to other crops. An estimated 39,161 bushels of soybeans, valued at $100,247 were lost due to the nematode in 434 fields. Estimated loss per field, which averaged 44 acres in size, was 90 bushels with a value of $231. Losses observed exceed those of any previous year. The above estimates are limited to 434 fields where damage actually was observed. There were many more fields in the Missouri counties where loss was not recorded because an overall intensive survey was not practical. It is evident there is quite general distribution of the pest in extensive areas of Dunklin, New Madrid, Pemiscot and Stoddard Counties. It appears likely the nematode is present in over 100,000 acres in the 7 known-infested counties. Presence of the pest has been confirmed in 952 Missouri fields involving approximately 39,000 acres at the close of 1963. Although damage actually observed during 1963 was estimated at $100,000, it is quite likely that overall loss, including the many fields where notes were not taken, was at least $200,000 to $300,000.

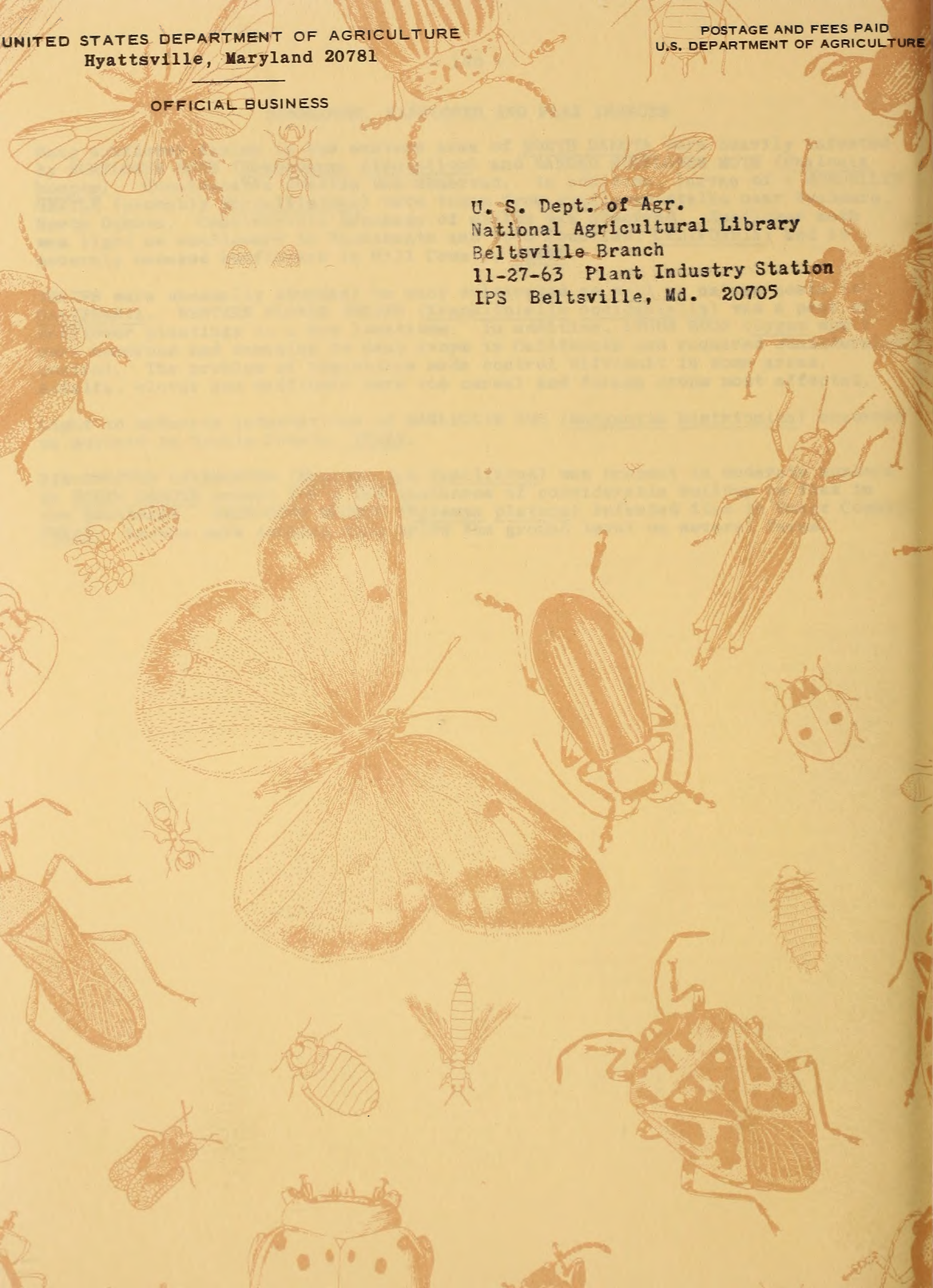
SUNFLOWER, SAFFLOWER AND FLAX INSECTS

Many sunflower fields in the eastern area of NORTH DAKOTA were heavily infested by SUNFLOWER MOTH (*Homoeosoma electellum*) and BANDED SUNFLOWER MOTH (*Phalonia hospes*). Considerable feeding was observed. In addition, larvae of a MORDELLID BEETLE (probably *Mordellistena*) were taken from sunflower stalks near Wyndmere, North Dakota. Considerable breakage of stalks was observed. Sunflower moth was light on sunflowers in Sacramento and Yolo Counties, CALIFORNIA; and it severely damaged sunflowers in Hill County, TEXAS.

THRIPS were unusually abundant on many cultivated as well as native hosts in CALIFORNIA. WESTERN FLOWER THRIPS (*Frankliniella occidentalis*) was a pest of safflower plantings in a few locations. In addition, LYGUS BUGS (*Lygus* spp.) were numerous and damaging to many crops in California and required considerable control. The problem of resistance made control difficult in some areas. Alfalfa, clover and safflower were the cereal and forage crops most affected.

Light to moderate infestations of HARLEQUIN BUG (*Murgantia histrionica*) occurred on mustard in Zavala County, TEXAS.

SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) was present in moderate numbers in NORTH DAKOTA except for a few instances of considerable buildup on flax in the southeast. SEED-CORN MAGGOT (*Hylemya platura*) infested flax in Bexar County, TEXAS. Larvae were cutting flax below the ground level on several farms.



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